Jeanne Alyluia

Eighteenth-Century Container Glass from the Roma Site, Prince Edward Island

Pierre R. Beaudet

Bottle Glass from a Privy at Fort George Military Reserve, Ontario

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Glassware Excavated from Fort Anne, Nova Scotia

Parks Canada Parcs Canada

45 History and Archaeology

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National Historic Parks and Sites Branch
Parks Canada
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EIGHTEENTH-CENTURY CONTAINER GLASS FROM THE ROMA SITE, PRINCE EDWARD ISLAND

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ABSTRACT

The 18th-century container glass from the Roma site has been divided into three main categories, one secondary category and one miscellaneous category on the basis of a combination of features that include glassmaking tradition, country of origin, function and dating. The main categories are (1) utilitarian blue-green containers of the French wood-burning tradition, (2) dark green liquor bottles of the French coal-burning tradition and (3) "black" glass liquor bottles of the English coal-burning tradition. The secondary category consists of small bottles resembling the French liquor bottles and believed to be their quarter- and half-sized counterparts. Objects unidentifiable by any of these standards are included in the miscellaneous category. A total of 156 identifiable objects were retrieved from the Roma site, the primary source being the storage cellar. French liquor bottles accounted for the majority of recovered vessels. These containers, plus the remaining French glassware, date from either the occupation period of the site (1732-45) or earlier. The small English sample pre-dates the site in terms of manufacture, but the bottles were in use during the occupation. One miscellaneous specimen may be concurrent with the occupation period, while the remaining two fragments appear to post-date it. All of the containers are of a general, utilitarian nature and could have been used by all segments of the Roma site population.

Submitted for publication 1975, by Jeanne Alyluia, Ottawa, Ontario.

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HISTORICAL BACKGROUND

Brudenell Point, situated on the east coast of Prince Edward Island (formerly Trois-Rivières and Ile St-Jean, respectively), was the site of two major occupations in the 18th and 19th centuries, the first being a French settlement, and the second an English general store (Fig. 1).

In 1732 a fishing and trading settlement was established by Jean Pierre Roma, director of the Compagnie de l'Est de l'Ile St-Jean. The enterprise, however, was beset with difficulties almost from its inception. Disagreements with the clergy and financial backers in France eventually left Roma as sole proprietor of the settlement in 1737. Crop devastation by mice and grasshoppers, shipwrecks and other misfortunes continued to plague the venture. In 1745 the settlement was completely destroyed by a party of New England privateers - part of the victorious expedition that had seized the Fortress of Louisbourg - and the project was abandoned (Coleman 1970: 91-97).

The site appears to have remained deserted until 1823, at which time Angus and Hugh MacDonald acquired lease rights to the point and erected a general store there. The store existed until about 1849 "when its second occupant, Dr. David Kaye, vacated the premises and the Aitken family of Lower Montague reportedly dismantled the store and transported it directly across the river to construct a new dwelling" (Korvemaker 1969: 5, 49). The length of time the MacDonalds operated the store and Dr. Kaye lived in it is not known, however.

Information about additional 19th-century structures in the vicinity of Brudenell Point is sparse. Documentary evidence permits the identification of the Shaw house and well, both dating from the late 1800s, and otherwise reveals only that the MacDonalds built several ships at the point and that a building of undetermined function was reported to have existed in 1820 (Korvemaker 1969: 78-80).

Except for the occupations discussed, the Brudenell Point area has generally been used for farming during the past 200 years, and consequently has been thoroughly ploughed.

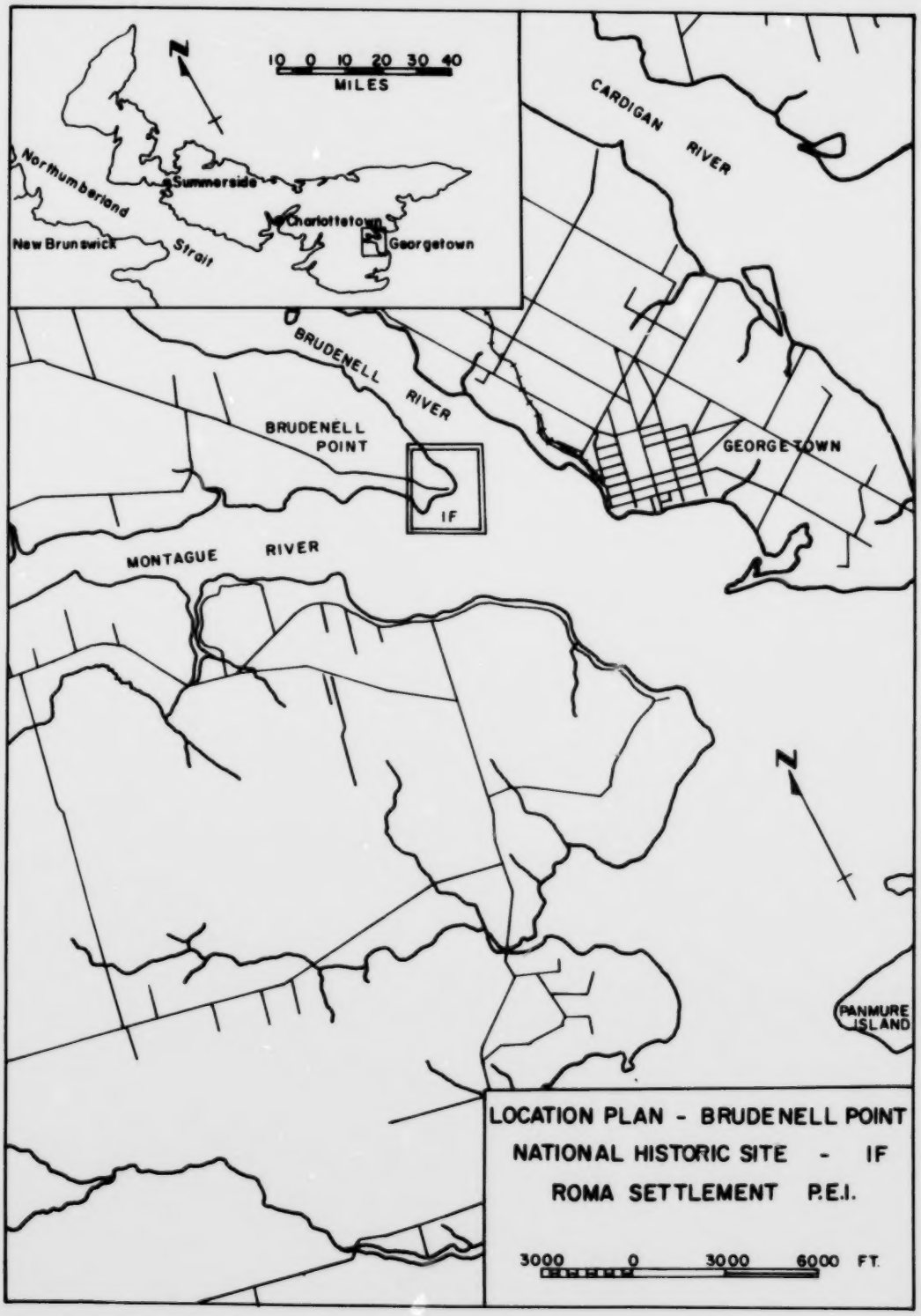


Figure 1. Location plan of the Roma site, Brudenell Point, P.E.I. (1F-68-101-3)

INTRODUCTION

This report deals with the identifiable 18th-century container glass excavated from the Roma site during the 1968-70 field seasons, primarily under the direction of E. Frank Korvemaker, formerly of the National Historic Parks and Sites Branch, the sponsor of the project along with the University of Prince Edward Island and the Canada Council (Figs. 2-4). The following 18th-century general and test operations are dealt with in this report:

1F4	The storage cellar (includes part of 1F13)
1F8	General surface finds
1F10	Test area; the freshwater springs
1F11	Test area; northwest of the monument (included in the blacksmith shop, trash pit, company house and 19th-century Brudenell Point house)
1F12	Unidentified French building no. 1
1F13	Test area; miscellaneous (partially included in the storage cellar, and the unidentified French building no. 3)
1F14	Test area; far beyond the western limits of the site
1F15	The company house (includes part of 1F11), and the 19th-century Brudenell Point house
1F17	Unidentified French building no. 2
1F18	Unidentified French building no. 3 (originally part of 1F13B)
1F19	Test area; west of operations 17 and 18
1F20	Unidentified building, possibly 18th-century
1F21	Test area; northwest of operation 17
1F22	Unidentified French building no. 4
1F23	The blacksmith shop (includes part of 1F11)
1F24	The trash pit (includes part of 1F11)

The 18th-century material from the Roma site is significant in terms of artifact study because it provides a valuable representative sample of three of the major glassware types found on French and English colonial sites. Because the context of the site is well-defined and relatively short-term, analysis of the glassware should provide data that could be applied to the interpretation of other sites. Social insights might also be possible if the information were considered in conjunction with other artifact groups; the glass containers in themselves are not

absolute indicators of human activity on a site since they are utilitarian items that would have been used by all social classes for similar purposes. The report, therefore, is intended to provide information on the background of the containers as well as on their physical attributes and differences.

The artifacts have been divided into three major, one secondary and one miscellaneous category according to a combination of the following features: glassmaking tradition, country of origin, function and dating. Each major category (one of which includes a secondary category) is represented by a chapter incorporating an economic and social history of the glass industry and manufacturing tradition which were instrumental in producing the containers, as well as a history of the containers themselves. The specimens from the Roma site are then dealt with in terms of dating, origin, manufacture and physical attributes and differences. Representative specimens are illustrated at the end of each chapter. The miscellaneous category is reserved for unique bottles, and attributions of these are attempted.

Standard bottle terminology is utilized throughout the report, although the term "flower pot" which is often used to describe French dark green glass liquor bottles is not used.

For cataloguing purposes, the Nickerson Color Fan (Munsell Color Company) was used under fluorescent lighting to determine colour.

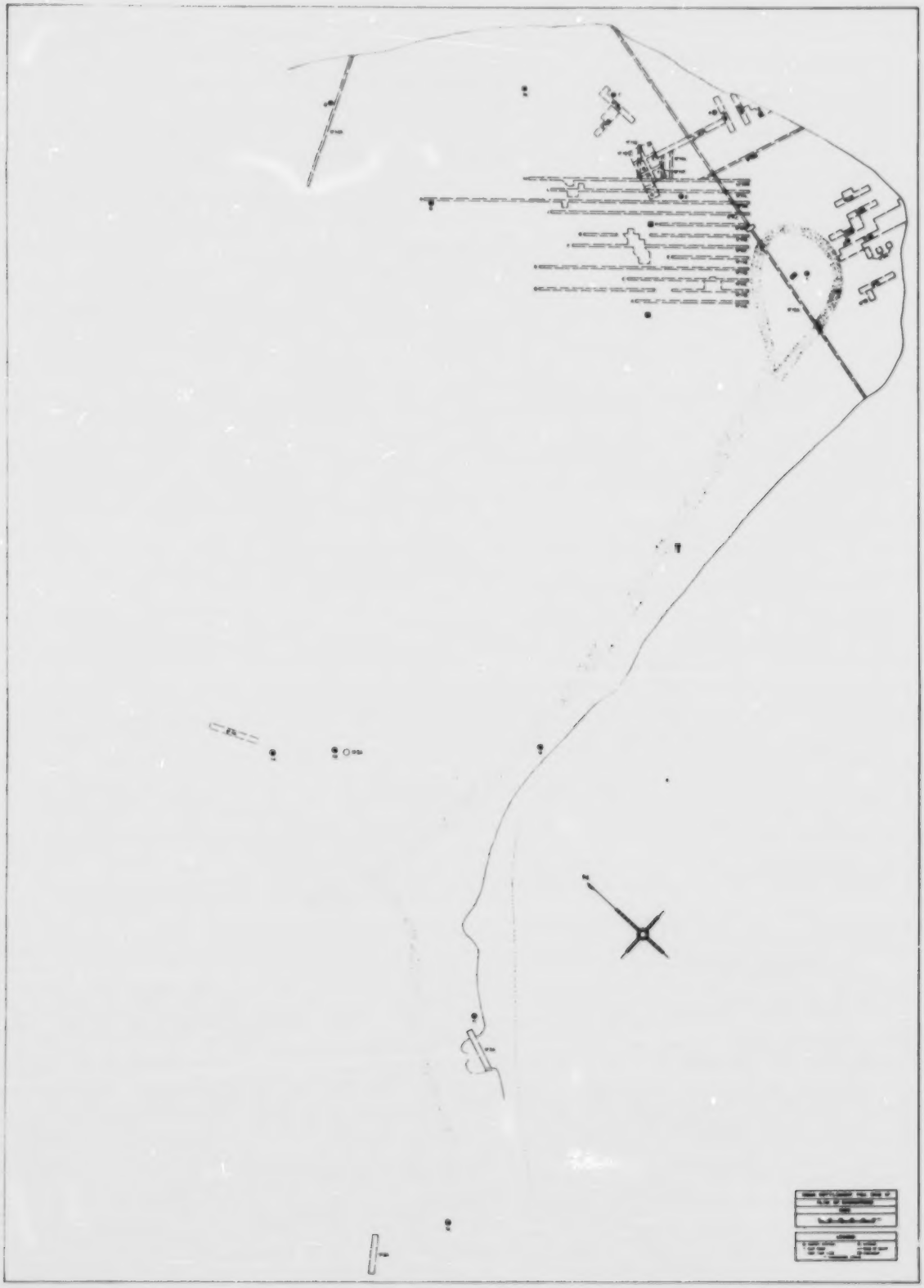


Figure 2. Excavation plan for the 1968 season at the Roma site, P.E.I. (1F-68-101-2B)

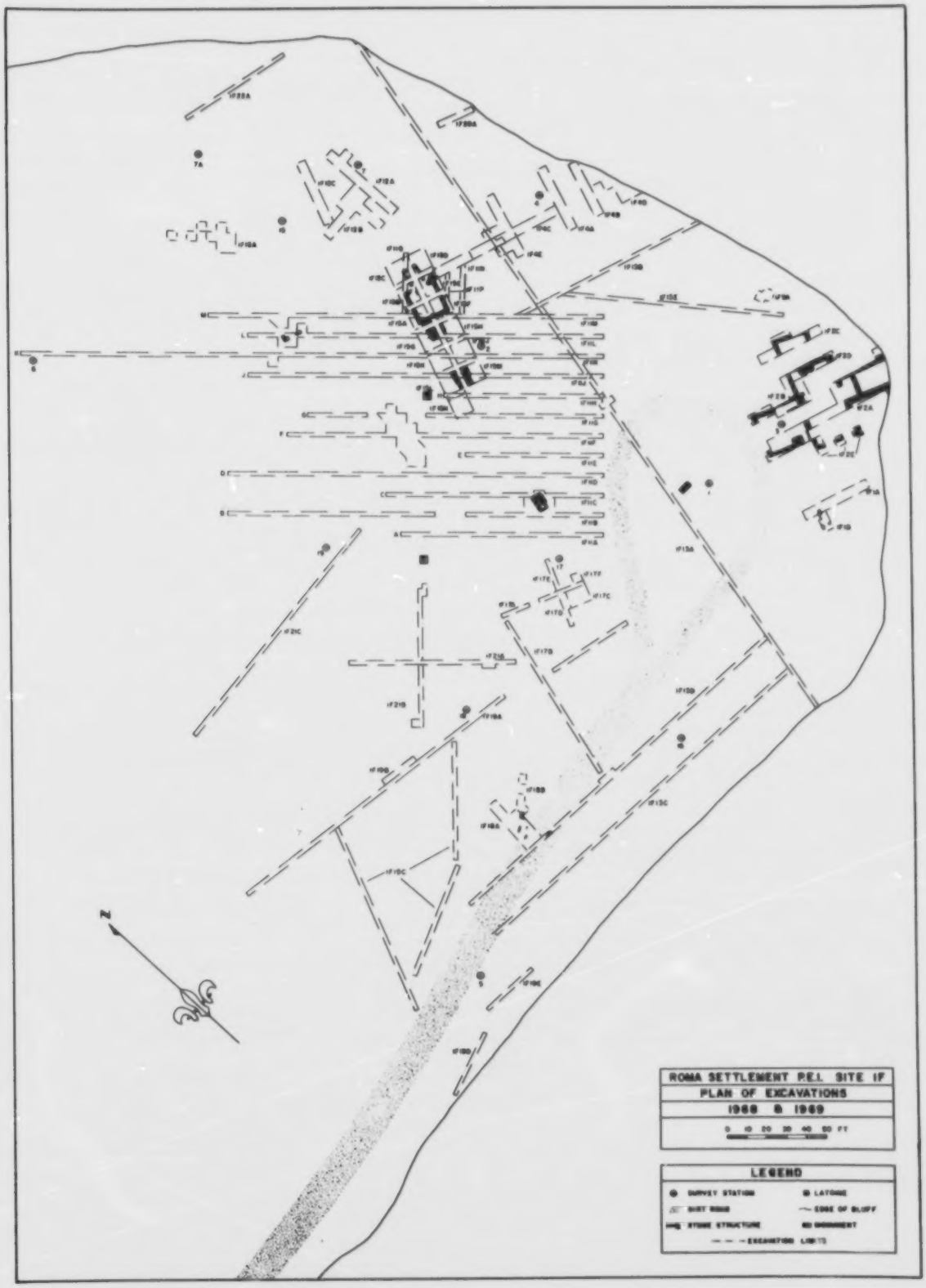


Figure 3. Excavation plan for the 1968 and 1969 seasons at the Roma site, P.E.I. (1F-69-101-1)

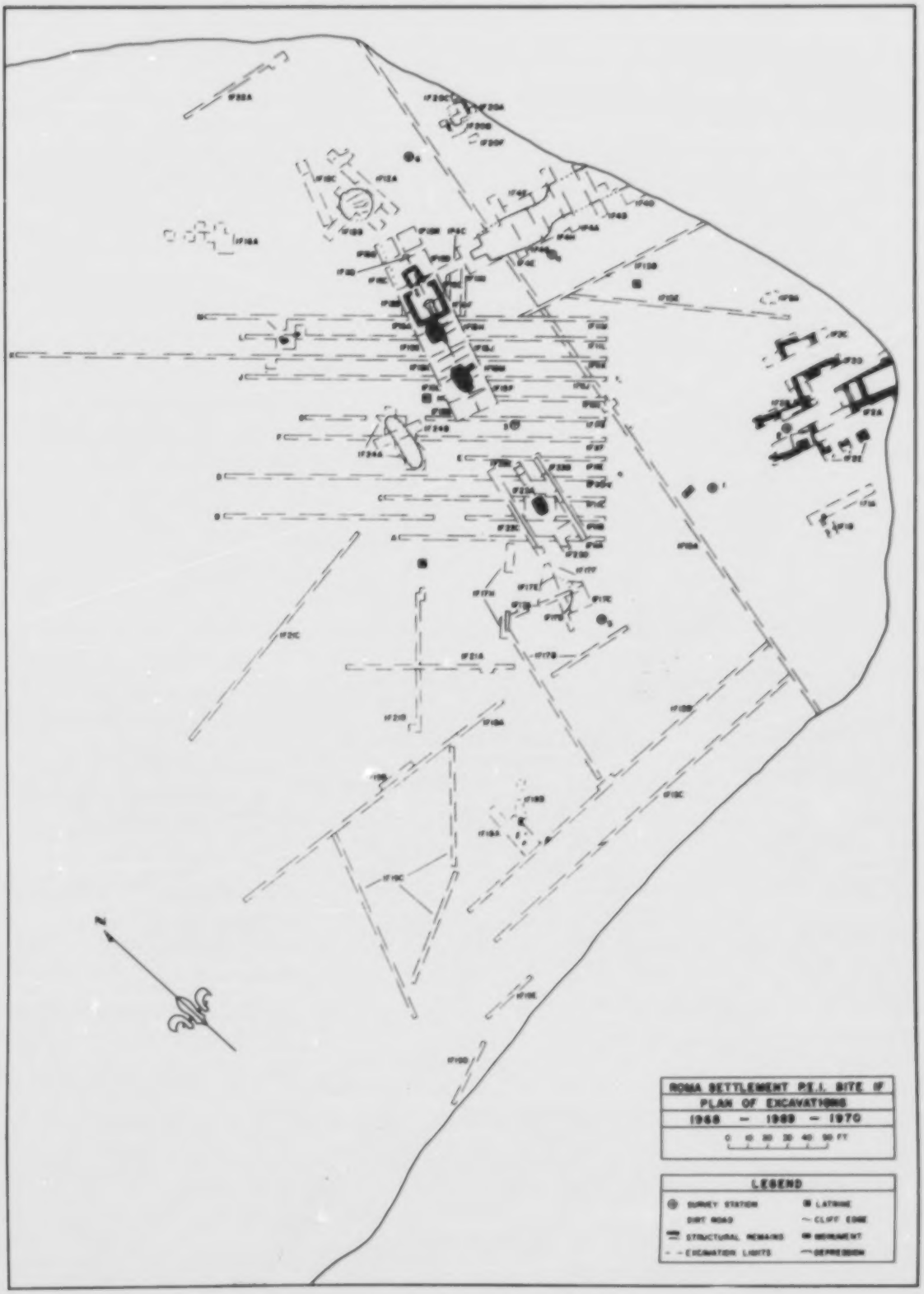


Figure 4. Excavation plan for the 1968-70 seasons at the Roma site, P.E.I. (1F-72-101-1)

FRENCH CYLINDRICAL BLUE-GREEN CONTAINERS

Industrial and Container History

Two container glass industries existed in France during the 18th century. The earlier tradition, dating back to at least the mid-17th century, was based on the use of wood fuel and produced fragile thin-walled containers of "common green" glass. These vessels were used for a variety of products such as liquors, foods (Fig. 7) and cosmetics and were often protected by a straw covering. The containers were blown in copper or wooden dip body moulds and came in a wide range of shapes and sizes: various combinations of cylindrical, tapering and square bodies with short, tall, wide or narrow necks were common. The "petites verreries", which produced common glassware, manufactured clear table glass as well (Figs. 5 and 6), since both types of glass were made of the same mixture but in different proportions; thus factories producing plate glass often manufactured common glass as well (Barrelet 1953: 101, 103; Scoville 1941: 154, 164; 1950: 11, 18, 19, 38, 110).

Because this early glassmaking tradition relied on the burning of wood, factories were located in forest regions, and costs were thus minimized by using the nearby fuel and raw materials. Shipping the finished products to market was cheaper than hauling basic materials to furnaces (Scoville 1950: 163). Indiscriminate use of wood, however, eventually left the forests nearly depleted, and between 1723 and 1725 restraining measures discouraging the use of wood were imposed by the government (Barrelet 1953: 96). As a result, fires were not lit as long, the glassmaking season became shorter and in general, common glass factories decreased in both number and size. In addition, the market for this type of glassware was shrinking; the new dark glass industry, which was producing stronger bottles, was expanding at this time and since it used coal as fuel, it was a desireable alternative. Forest glasshouses were not totally superseded, however, and continued production on a smaller scale until at least 1789 (Scoville 1950: 13, 21, 60, 131).

The Fuel, Furnace and Factory

As stated previously, French common green containers were the product of wood-fired furnaces. Three types of furnaces designed to burn this fuel were used in different parts of the country. The smallest type, located in

southern France, was circular and beehive in shape, and utilized the upper section as an annealing chamber (Fig. 5). The fire was built directly on the ground.

The furnace used in Norman shops making window glass (and possibly common green glass) was square or rectangular. Auxiliary ovens for calcining raw materials and tempering crucibles were built at the four corners and were heated by means of small flues located in the walls of the melting furnace. The fire was built on a grate extending the length of the furnace and had a rather deep ash-bin and draught underneath.

The German furnace was in use before 1640, particularly in northeastern France in shops producing common green glass and tableware. It differed from the Norman furnace in one respect only: its grate was open at both ends rather than at one. A hotter blaze could thus be achieved by feeding the fire through both openings and by regulating the two draughts (Scoville 1941: 153, 154; 1950: 37). (The variations in blue-green glass observed in containers from several historical sites may be due to the fact that they were manufactured in different locations and under these different conditions, since heat intensity affects the batch used and how it melts.)

The typical factory in all branches of the French industry was square or rectangular and housed the melting furnaces and annealing ovens. It had numerous doors and windows through which smoke from its furnaces could pass, since few shops had chimneys. Consequently, when glass was being melted the shop appeared to be on fire (Scoville 1941: 159, 160; 1950: 42).

The Roma Site Containers

Origin and Dating

The thin-walled, highly seed-bubbled, blue-green containers from the Roma site are believed to be the common green type of glassware produced in French wood-burning furnaces. Similar containers have been illustrated in French paintings of the period (Fig. 7) and have been found on several colonial sites of known French occupation in both Canada and the United States. It is difficult to assign a date of manufacture to the group since such containers were produced between 1640 and 1789 without much change, although production did decrease after 1720 because of the wood shortage (Scoville 1950: 13).

Manufacture and Resulting Physical Characteristics

Although French blue-green containers were manufactured in a variety of shapes, the specimens from the Roma site all have cylindrical bodies and four fragments display short wide necks (Fig. 8). Three different base diameters suggest that three different sizes are present. All of the containers have been free-blown, probably with the use of a dip body mould, and the existing rim fragments are not tooled but indicate fire-polishing. Although fundamentally similar, the bases vary somewhat: the profiles range from conical to parabolic to rounded cone; some of the bases have definitely been pushed up with a pointed tool, while others bear no push-up mark, and most exhibit a glass-tipped pontil mark except in one case where a ring may be present (Figs. 9-13).

The following is a breakdown of the range of dimensions (mm), quantities and types of features on the French cylindrical blue-green containers from the Roma site:

Sample: 11 diagnostic objects consisting of four neck fragments and seven base fragments
Colour: 1) 10BG (8); 2) 2.5BG (2); 3) 2.5B (1)
Lip diam.: 80
Bore diam.: 75
Neck diam.: a) 75-80; b) ?; c) 75
Neck ht.: 38-40
Body diam.: a) 100 (approx.); b) 90-93; c) 81-104
Base diam.: 1) 80 (2); 2) 90 (2); 3) 100 (2 or 3)
Basal profile type: 1) cone (2); 2) rounded cone (1); 3) parabola (1); 4) indeterminate (1)
Basal profile ht.: 20-24
Push-up mark type: 1) pointed (2 or 3); 2) indeterminate (2)
Pontil mark type: 1) glass tipped (4); 2) ring ? (1)
Pontil mark diam.: 1) glass tipped, 20-30; 2) ring ? a) 22; b) 16
Bottle ht.: 170 extant

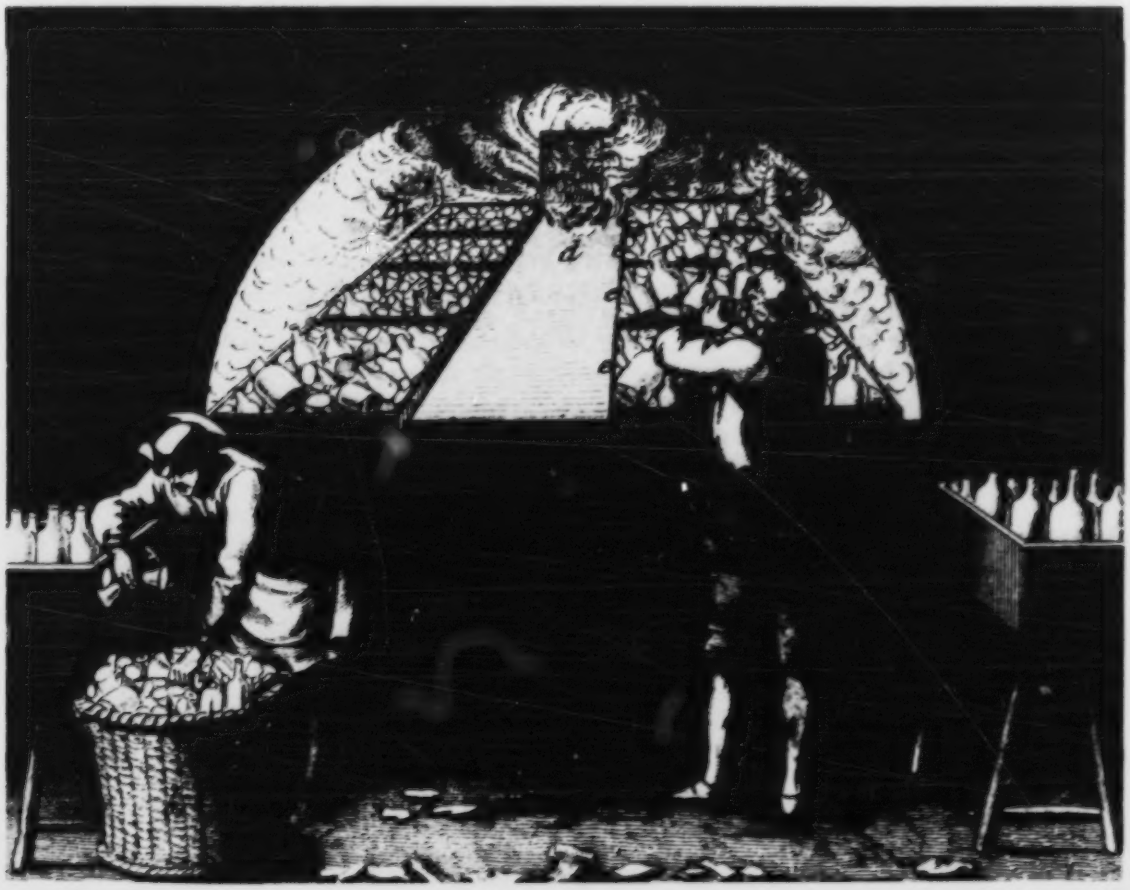


Figure 5. Interior of a "petite verrerie" or "verrerie en bois" showing common green glass containers and tableware in the annealing chamber above a circular beehive-shaped wood-burning furnace (Diderot 1772: Pl. XXII; RD-458 B).

Figure 6. Some of the types of common glass and tableware produced in a "verrerie en bois" (Diderot 1772: Pl. XXII; RD-457 B).

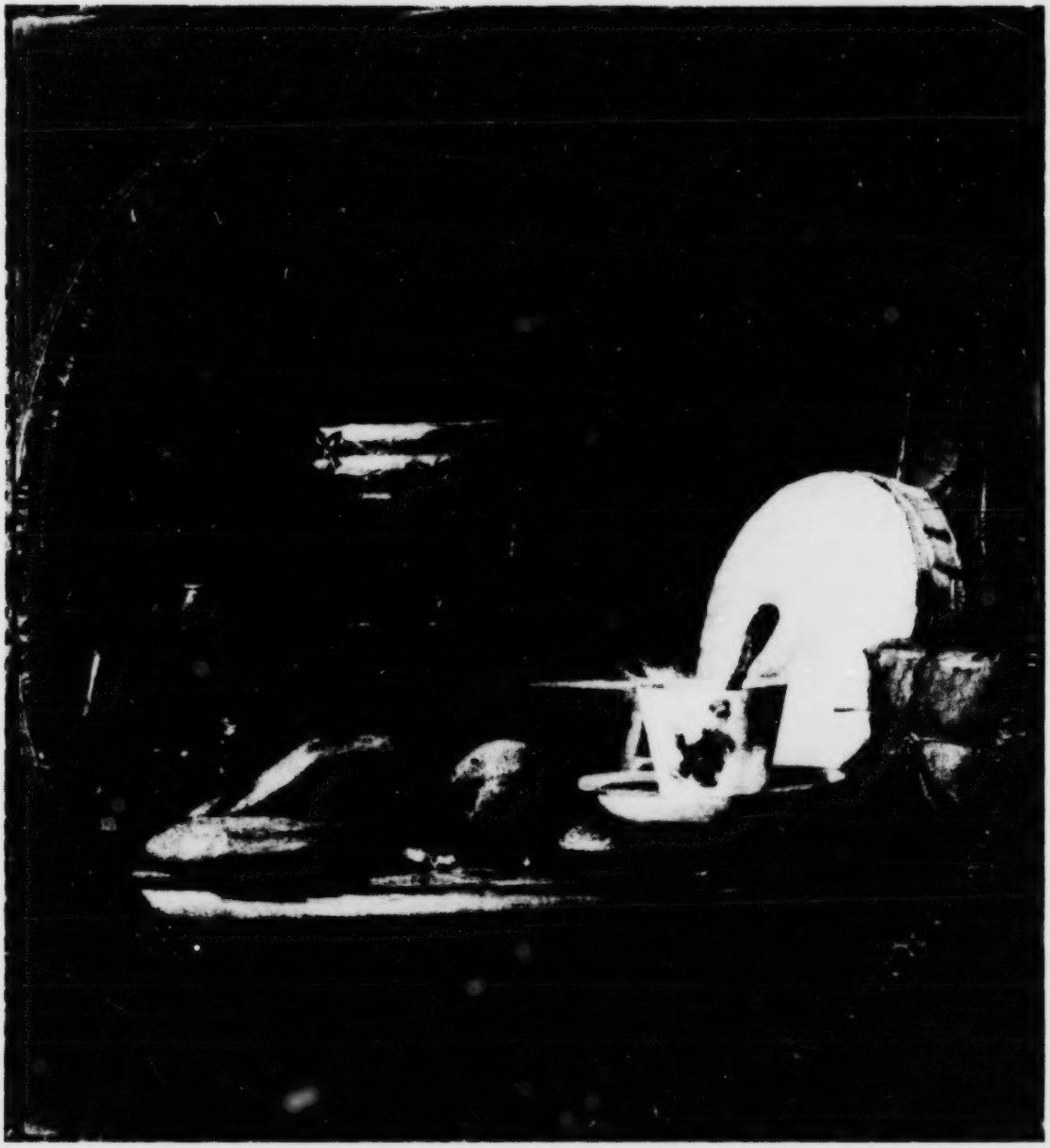


Figure 7. J.B. Chardin's painting, "Un bocal d'abricots" (1750-60), illustrating a wide-mouthed cylindrical blue-green container such as the one recovered from the Roma site (cf. Fig. 8). A piece of cloth tied with string acts as the closure. (Art Gallery of Ontario, Toronto.)

Figure 8. A composite drawing of a French wide-mouthed cylindrical blue-green container (cf. Fig. 7). (1F4F21-3; 1F4F21-4; 1F4E47-25) Colour: 10BG; Lip diam.: 80 mm approx.; Bore diam.: 75 mm approx.; Neck diam.: a) 75-80 mm, b) ?, c) 75 mm approx.; Neck ht.: 38 mm; Body diam.: a) 100 mm approx., b) 93 mm; Body ht.: 115 mm extant; Bottle ht: 170 mm extant.

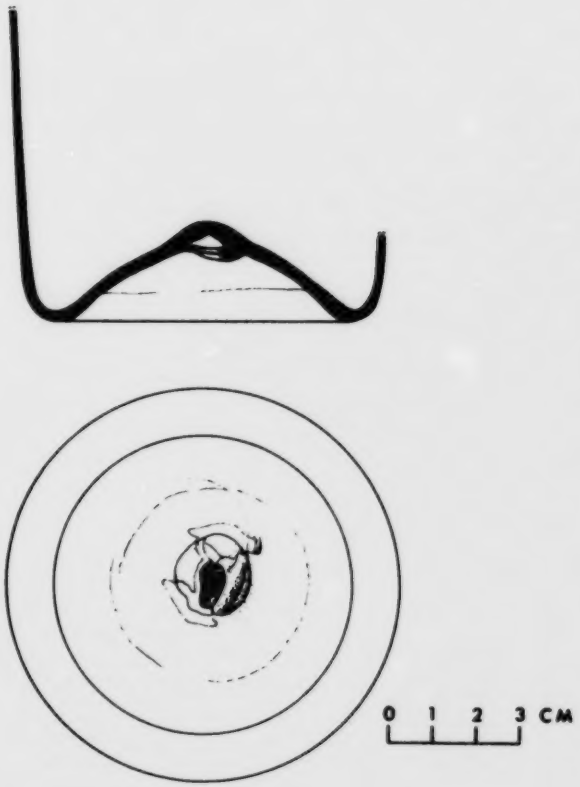
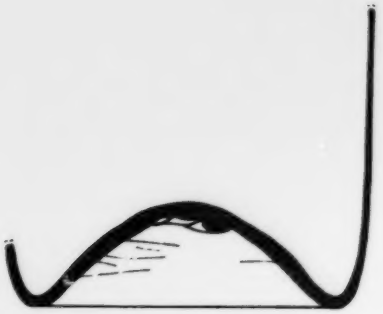


Figure 9. Group I bases: 80 mm diameter. Partial body and base of a French cylindrical blue-green container with a cone-shaped basal profile, pointed push-up mark and broken glass-tipped pontil mark. (1F4F47-29) Colour: 10BG; Body diam.: a) ?, b) ?, c) 81 mm; Body ht.: 71 mm extant; Basal profile ht.: 21 mm; Pontil mark diam.: 20 mm.



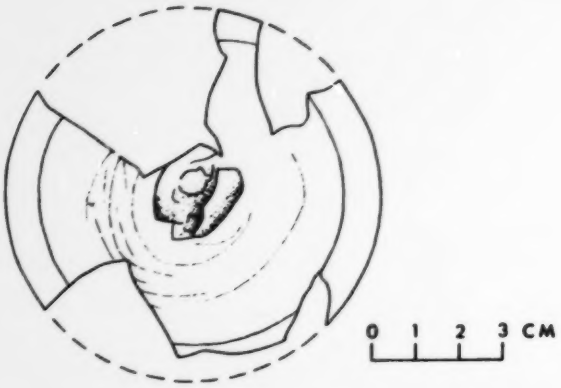
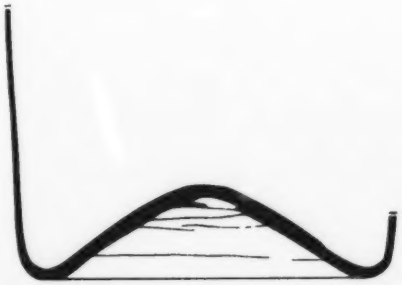
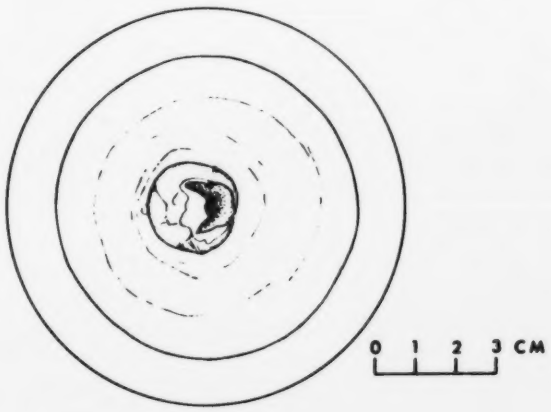


Figure 10. Group I bases: 80 mm diameter. Partial body-base of a French cylindrical blue-green container with a parabolic basal profile and broken glass-tipped pontil mark. (1F11F26-17) Colour: 2.5BG; Body diam.: a) ?, b) ?, c) 81 mm; Body ht.: 69 mm extant; Basal profile ht.: 20 mm; Pontil mark diam.: 22 mm.

Figure 11. Group II bases: 90 mm diameter. Partial body and base of a French cylindrical blue-green container with a cone-shaped basal profile, pointed push-up mark and broken glass-tipped pontil mark. (1F4G9-4) Colour: 10BG; Body diam.: a) ?, b) ?, c) 92 mm; Body ht.: 68 mm extant; Basal profile ht.: 20 mm; Pontil mark diam.: 20 mm.





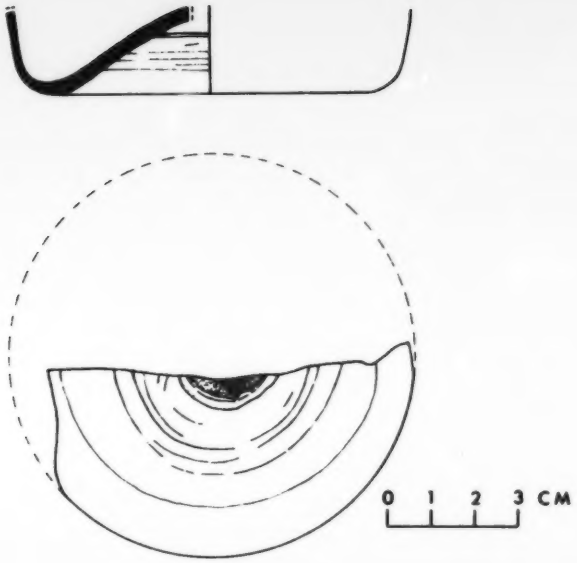


Figure 12. Group II bases: 90 mm diameter. Partial base of a French cylindrical blue-green container with what appears to be a pointed push-up mark and possibly a ring pontil mark. (1F11F30-2) Colour: 2.5BG; Basal profile ht.: 16 mm extant; Pontil mark diam.: a) 22 mm., b) 16 mm.

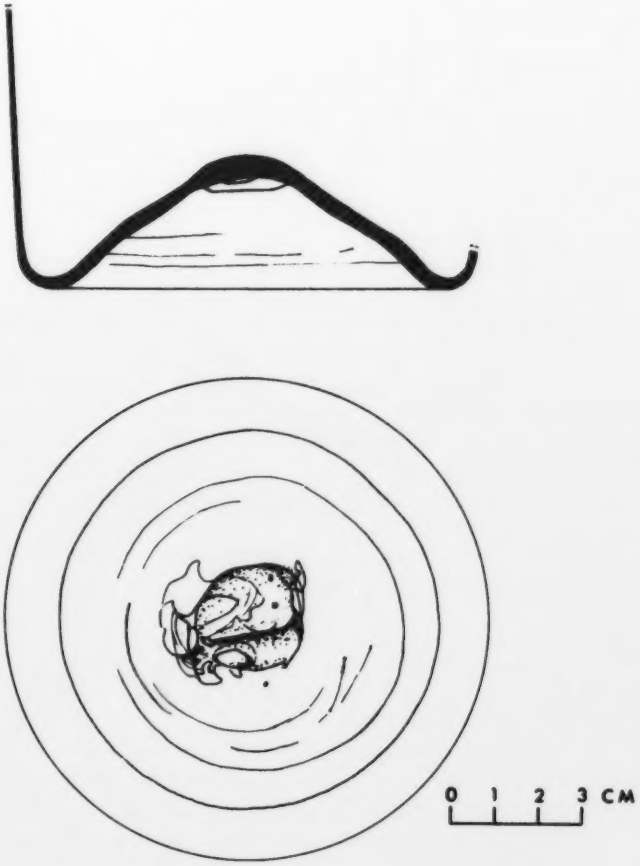


Figure 13. Group III bases: 100 mm diameter. Partial body and base of a French cylindrical blue-green container with a slightly rounded cone-shaped basal profile and covered glass-tipped pontil mark. (1F4E52-2) Colour: 10BG; Body diam.: a) ?, b) ?, c) 104 mm; Body ht.: 65 mm extant; Basal profile ht.: 24 mm; Pontil mark diam.: 30 mm.

FRENCH DARK GREEN GLASS LIQUOR BOTTLES

Industrial and Bottle History

The second bottle glass industry in France during the 18th century was based on the use of coal as fuel. The increasing scarcity of wood had encouraged some glassmakers to use coal before the turn of the 17th century, but about 1700 the French began to copy the superior English method of manufacturing bottles which was to form the basis of their own industry. This technique, using coal, a special furnace and ideally a special factory, produced sturdy dark bottles that were used primarily for liquors and mineral waters but possibly for other products as well (Barrelet 1953: 96; Scoville 1941: 158, 159). The new strong bottles gained popularity rapidly and their production increased markedly after 1720 (Scoville 1950: 3). Several factors contributed to this rise: wine and brandy merchants began to prefer the new stronger bottles, associating their dark colour with strength, and they began bottling greater quantities of their products; families from both the upper and lower classes also preferred bottled wine and began keeping large quantities on hand; France's expanding foreign trade also created a demand for bottled wines (Scoville 1950: 110, 111).

For reasons of expediency, the "grosses verreries" producing these bottles were located near either coal mines or seaports; the preferred English coal or the inferior French variety could thus be brought in, and bottles for export could be shipped out (Barrelet 1953: 96; Scoville 1941: 162, 163; 1950: 111).

The shape of the new dark bottles underwent some change during the 18th century. In 1700 the bodies were squat and globular, and the necks short, wide and tapering to a cracked-off lip and rounded string rim. They soon evolved into a more elongated and cylindrical Benedictine shape, still incorporating the cracked-off lip and applied rounded string rim, and remained about the same until the end of the century (Barrelet 1953: 102, 201, Pl. XLVI).

In March 1735 a declaration by the king attempted to standardize and regulate the weight and volume of the bottles to protect the public from fraud. The bottles were to be 25 oz in weight, and a French pint, approximately 32 oz in volume. Half, quarter and double sizes were to be in proper proportion. In spite of the regulations, however, 18th-century bottles were not always of uniform size, the discrepancy resulting from individual craftsmanship as well as the deliberate attempts of the bottlemakers and innkeepers to defraud the public (Barrelet 1953: 102, 103).

The Fuel, Furnace and Factory

The burning of coal in place of wood produced higher furnace temperatures, thus speeding the melting process and allowing more sand and less potash and soda to be used in the batch; dark bottles of superior strength were the result. With the advantages came problems, however. Converting old wood-fired furnaces to ones that burned coal was not an easy task since dark bottle production required different equipment and techniques. Most wood-burning furnaces, for example, did not have a draught strong enough to create a blaze that would melt the new batch. In addition, the burning of coal produced sulphurous fumes troublesome to the workers. The furnace problem was overcome by adopting the English-style furnace successfully employed in England since the mid 17th-century (see "English 'Black' Glass Liquor Bottles"). Although the problem with fumes could have been solved by adopting the English-style factory as well, this was not readily done, the high costs of building such facilities probably being one of the reasons. As late as 1784 not one faithful copy of the English factory existed in France. Many shops, however, tried to incorporate certain English features in their designs; a steeply slanting roof with a large opening in the centre through which smoke and fumes could escape was modelled after the English factory which was an inverted funnel in shape - the base of the French factory was rectangular rather than circular, however (Scoville 1950: 8, 41, 42).

The Roma Site Bottles

Origin and Dating

The dark green glass liquor bottles from the Roma site are believed to be the product of France's coal-fired furnaces. Diderot illustrates the manufacture of such bottles according to this tradition (Figs. 14-18), and French paintings of the period illustrate them as well (Fig. 19). French colonial sites in both Canada and the United States have yielded large quantities of similar bottles. The Roma site specimens are typical of 1732-45, but they could have been manufactured at an earlier date.

Similar bottles with seals bearing the name PYRMONT or PIERMONT WATER (a German spa water popular between 1720 and 1770) have been unearthed in some excavations (Noël Hume 1961: 101, 105, 109, 111; 1970: 61, 62), but since no such seals were found in conjunction with the Roma site bottles, they are not believed to have been used for this product.

Manufacture and Resulting Physical Characteristics

The dark green glass liquor bottles from the Roma site have been individually blown with the use of traditional glassmaking tools and a dip body mould (Figs. 14-18). They are basically alike in form: their lips are cracked off and occasionally fire-polished; their string rims are an applied rounded band of glass; their necks are tall and taper toward the finish; their shoulders are distinctly curved, and their bodies are primarily cylindrical, but taper toward the base. There is some variety in their basal features, however. Most of the basal indentations are rounded cones, although some are bell-shaped and others are intermediate. Some of the bases exhibit a circular or ring-shaped push-up mark, the latter being covered with an iron oxide deposit from the tool. Except for a small number of ring-shaped pontil marks, all are glass-tipped.

Although the body moulding technique helped to standardize shape and size, it was not sufficient to produce bottles exactly within the limits specified in the 1735 royal decree. If the Roma site bottles were manufactured after the declaration, and it is possible that they were, they should theoretically conform to the standards. In fact, however, their weights and volumes are both under and over the prescribed limits.

Figures 20a-33 are a representative sample of the bottles from the Roma site, illustrating differences of manufacturing technique and individual craftsmanship.

The following is a breakdown of the range of dimensions (mm), quantities and types of features on the French dark green liquor bottles from the Roma site:

Sample: 116 diagnostic objects consisting of 36 complete bottles, 40 additional finish-neck fragments and 40 additional base-body fragments

Colour: 1) 2.5GY (104); 2) 10Y (9); 3) 7.5Y (3)
Lip diam.: 19-36
Lip ht.: 3-11
Bore diam.: 14- 23
String rim diam.: 30-44
String rim ht.: 3-11
Finish ht.: 9-18
Neck diam.: a) 21-31; b) 27-48; c) 44-62
Neck ht.: 85-115
Body diam.: a) 114-123; b) 106-119; c) 100-113
Body ht.: 1) 80-90 (75); 2) 70-75 (1)
Base diam.: 95-113
Basal profile type: 1) rounded cone (60-62); 2) bell (2-3); 3) intermediate (4).
Basal profile ht.: 1) rounded cone: 30-55; 2) bell: 47-55; 3) intermediate: 36-62
Push-up mark type: 1) ring (2-4); 2) circular (1)

Push-up mark diam.: 1) ring: 13-15; 2) circular: 8
Pontil mark type: 1) glass-tipped (59-65); 2) ring: (3-4)
Pontil mark diam.: 1) glass-tipped: 25-35; 2) ring: a) 26-35; b) 17-22
Bottle ht.: 215-255
Wt.: 23.8-32.3 oz
Vol.: 26-33 oz

Small Bottles

Seven bottles that resemble those in the above category except in size and often in glass quality are also present in the Roma site collection. These bottles represent two smaller sizes and are of a type of glass that is fragile in most cases and usually a lighter or more yellow-green colour. A satisfactory explanation for these differences has not been found, and they may suggest a specialized use. However, because of the basic similarity to the larger dark glass liquor bottles, and because the 1735 royal decree mentions half- and quarter-sized bottles, they are included in the category and are probably contemporary (Fig. 34).

In lip, string rim, neck, shoulder and body form, the smaller bottles resemble their larger counterparts. All of their basal profiles, however, are rounded cones, and exhibit pointed or circular push-up marks and glass-tipped pontil marks only. Figures 35a-38 show representative samples of these bottles.

The following is a breakdown of the range of dimensions (mm), quantities and types of features on these smaller specimens:

Sample: A total of seven diagnostic objects divided into two groups according to base size primarily:

Group I - Possible quarter-sized bottles: four diagnostic objects consisting of two almost complete bottles and two additional bases.

Group II - Possible half-sized bottles: three diagnostic objects, consisting of one complete bottle and two additional bases.

Group I	Group II
Colour:	Colour:
1) 10Y (3)	1) 10Y (1)
2) 10GY (1)	2) 2.5GY (2)
Lip diam.: 23-27	22
Lip ht.: 4-6	0-5
Bore diam.: 16-20.5	13
String rim diam.: 27-31	28-30
String rim ht.: 3-6	5-9
Finish ht.: 9-12	8-12

Neck diam.:	
a) 20-21	a) 22
b) 23-25	b) 25
c) 31-35	c) 40
Neck ht.: 60-63	85
Body diam.:	
a) 76-78	a) 87-95
b) 74-76	b) 84-93
c) 70-73	c) 82-92
Body ht.: 45-52	50-60
Base diam.: 68-78	81-92
Basal profile type: rounded cone	rounded cone
Basal profile ht.: 14-17	25-35
Push-up mark type:	
1) pointed (2)	1) circular (1)
2) indeterminate (2)	2) indeterminate (2)
Pontil mark type:	
1) glass-tipped (3)	1) glass-tipped (2)
2) indeterminate (1)	2) indeterminate (1)
Pontil mark diam.: 13-17	22-28
Bottle ht.: 145-162	176

Figure 14. Forming the body of a French liquor bottle in a dip mould (Diderot 1772: Pl. IV; RD-34 T).

Figure 15. Forming the base of a French liquor bottle with a metal tool called a "molette" (left), and then re-marvering the body to restore its symmetry (Diderot 1772: Pl V; RD-35 T).

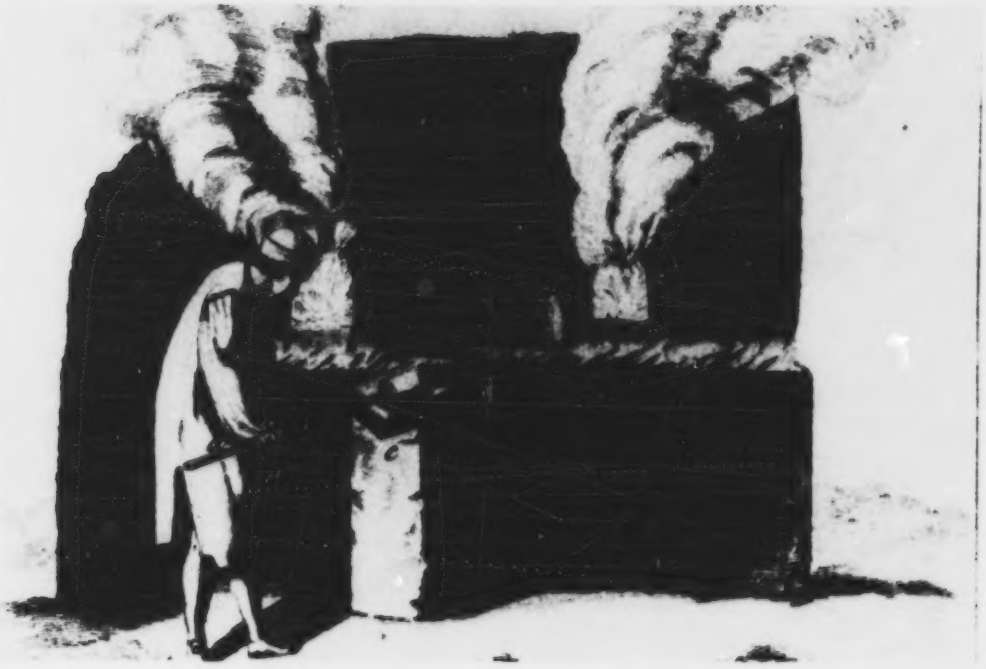


Figure 16. Attaching the blowpipe, which is to be used as the pontil rod, to the base of a French liquor bottle. A ring-shaped pontil mark should result (Diderot 1772: Pl. V; RD-36 T).

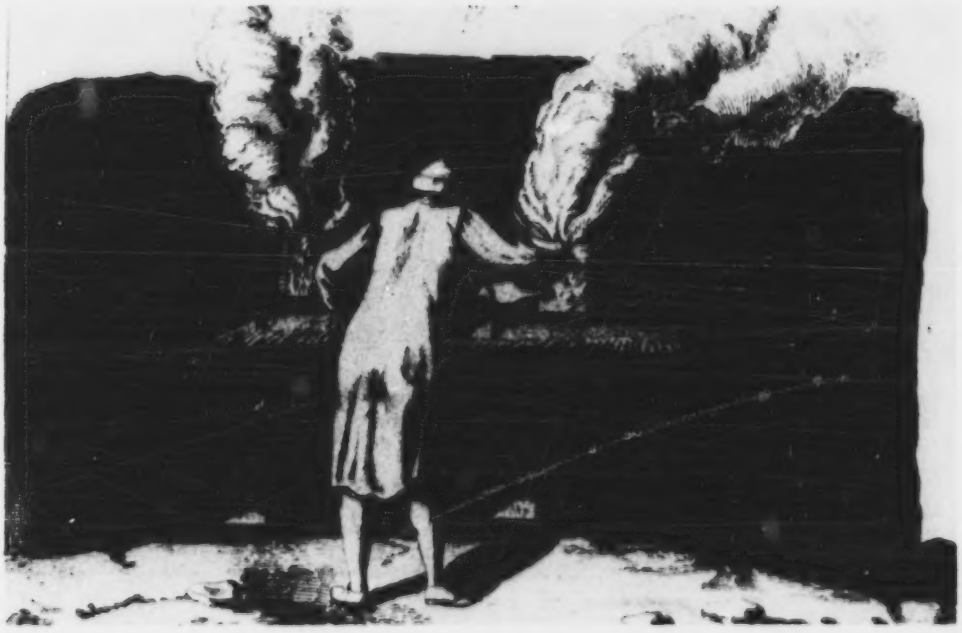


Figure 17. Applying the string rim to the neck of a French liquor bottle with a metal rod. The bottle is still being held on the pontil (Diderot 1772: Pl. VI; RD-37 T).

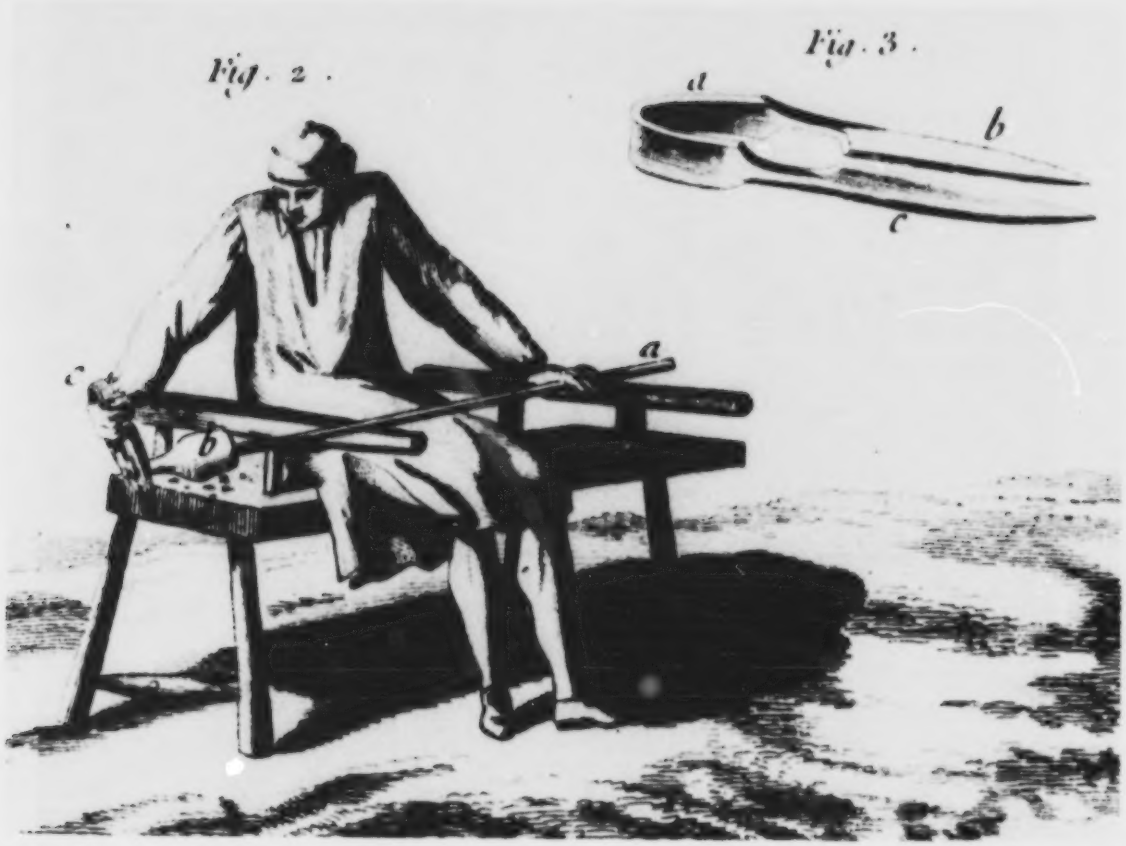


Figure 18. Shaping the string rim of a French liquor bottle with a metal tool called a "pince" (Diderot 1772: Pl. VI; RD-38 T).

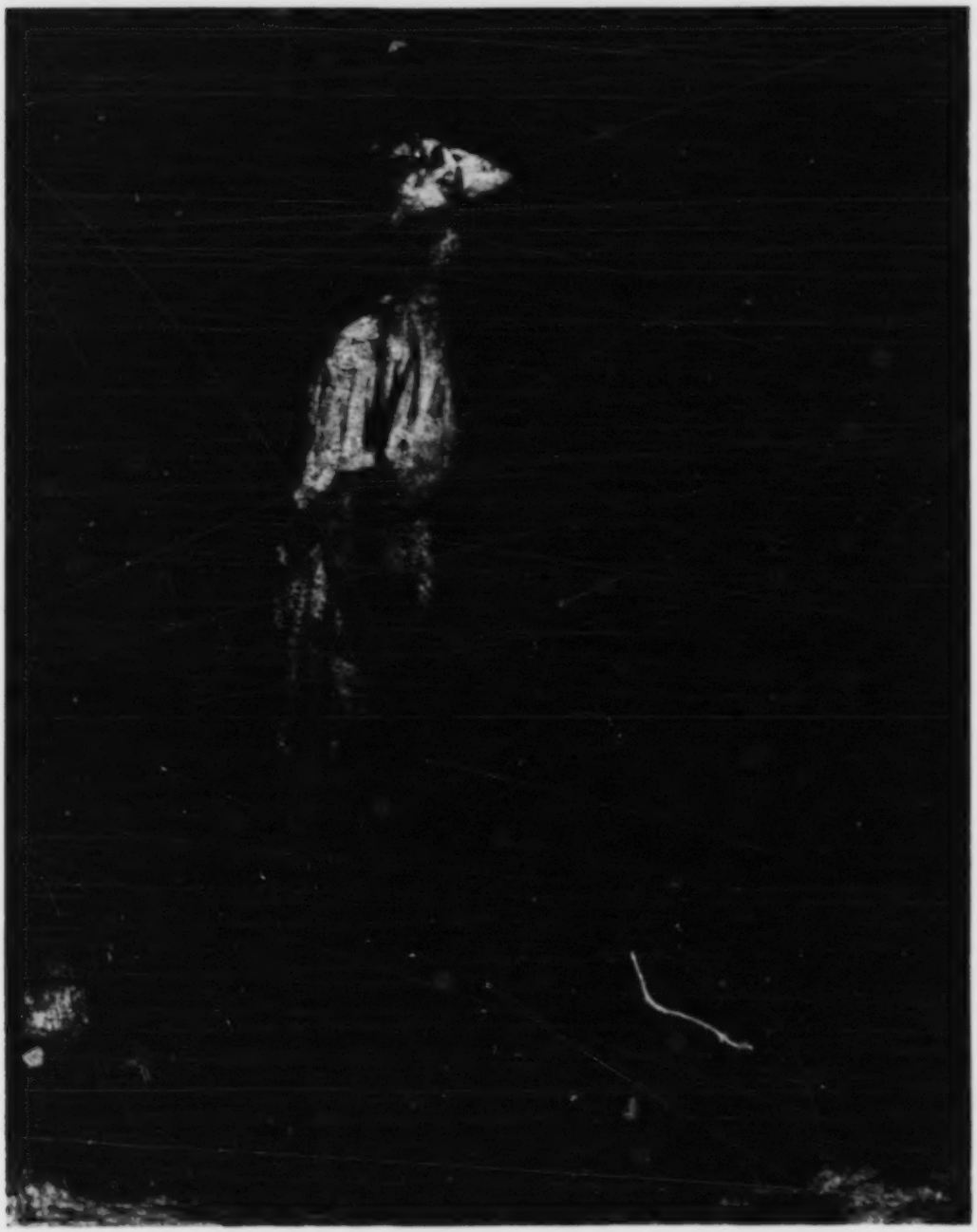


Figure 19. J.B. Chardin's painting "Le garçon cabaretier" (about 1738) showing a typical French liquor bottle such as the ones found at the Roma site. Judging from the white frothy substance at the top of the funnel, it is being filled with beer. (Hunterian Collection, University of Glasgow, Scotland.)

Figure 20a. An average French dark green glass liquor bottle. For specific details and dimensions see Figure 20b. (1F4E34-2; RA-2257 B)

Figure 20b. This average specimen has a typical finish, neck and body, and displays a common rounded cone-shaped basal profile with a glass-tipped pontil mark. (1F4E34-2) Colour: 2.5GY; Lip diam.: 26 mm; Lip ht.: 8-9 mm; Bore diam.: 14 mm; String rim diam.: 38 mm; String rim ht.: 6-8 mm; Finish ht.: 14-17 mm; Neck diam.: a) 24 mm, b) 35 mm, c) 55 mm; Neck ht.: 105 mm; Body diam.: a) 118 mm, b) 114 mm, c) 107 mm; Body ht.: 80 mm; Base diam.: 104-6 mm; Basal profile ht.: 43 mm; Pontil mark diam.: 30 mm; Bottle ht.: 235 mm; Wt.: 25.6 oz; Vol.: 29 oz.

Figure 21a. An average French dark green glass liquor bottle. For specific details and dimensions see Figure 21b. (1F4F8-1; RA-2251 B)

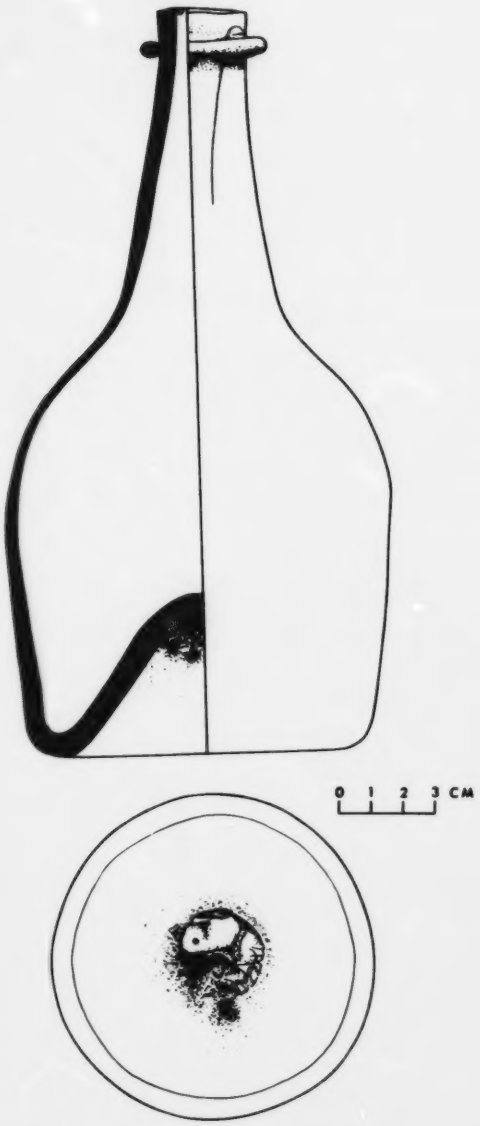


Figure 21b. This average specimen has a typical finish, neck and body, and displays a common rounded cone-shaped basal profile with a glass-tipped pontil mark, which in this case has turned an opaque blue from an undetermined chemical reaction. (1F4F8-1) Colour: 2.5GY; Lip diam.: 29 mm; Lip ht.: 7-8 mm; Bore diam.: 16 mm; String rim diam.: 36-39 mm; String rim ht.: 5-6 mm; Finish ht.: 15 mm; Neck diam.: a) 27 mm, b) 38 mm, c) 55 mm; Neck ht.: 100 mm; Body diam.: a) 118 mm, b) 113 mm, c) 107 mm; Body ht.: 80 mm; Base diam.: 105 mm; Basal profile ht.: 40 mm; Pontil mark diam.: 27 mm; Bottle ht.: 235 mm; Wt.: 25.1 oz; Vol.: 31 oz.

Figure 22a. French dark green glass liquor bottle, variation I: narrow neck. For specific details and dimensions see Figure 22b. (1F4E20-3; RA-2254 B)

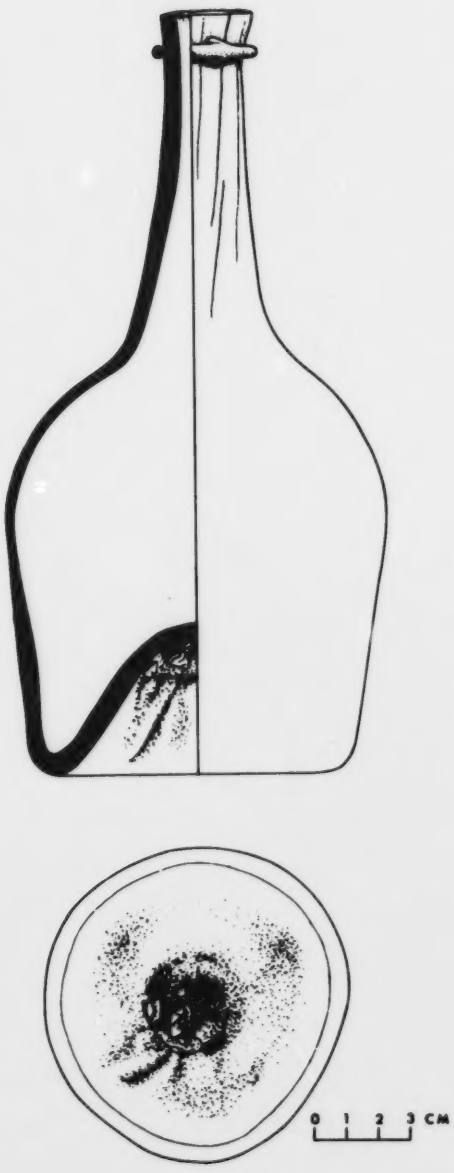


Figure 22b. This specimen has a narrower neck and string rim than usual, but its body is typical and its rounded cone-shaped basal profile with a glass-tipped pontil mark is common. (1F4E20-3) Colour: 2.5GY; Lip diam.: 29 mm; Lip ht.: 10 mm; Bore diam.: 17 mm; String rim diam.: 33 mm; String rim ht.: 4 mm; Finish ht.: 14 mm; Neck diam.: a) 24 mm, b) 27 mm, c) 45 mm; Neck ht.: 100 mm; Body diam.: a) 118 mm, b) 115 mm, c) 109 mm; Body ht.: 90 mm; Base diam.: 99-110 mm; Basal profile ht.: 40 mm; Pontil mark diam.: 30 mm; Bottle ht.: 240 mm.

Figure 23a. French dark green glass liquor bottle, variation I: narrow neck. For specific details and dimensions see Figure 23b. (1F4C22-1; RA-2250 B)

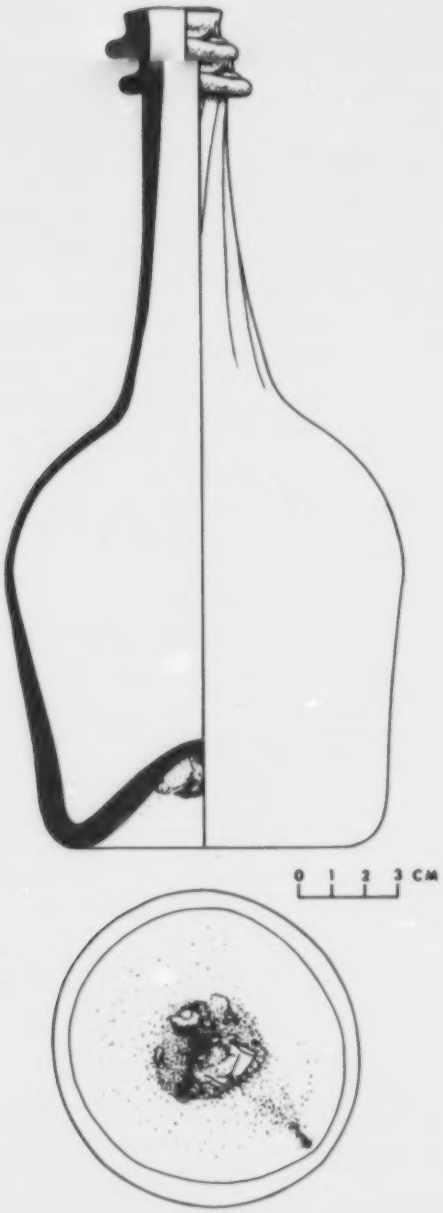


Figure 23b. This specimen has a narrower neck than usual, but its finish and body are typical, and its rounded cone-shaped basal profile with a glass-tipped pontil mark is common. (1F4C22-1) Colour: 2.5GY; Lip diam.: 29-31 mm; Lip ht.: 7 mm; Bore diam.: 16 mm; String rim diam.: 39-41 mm; String rim ht.: 6 mm; Finish ht.: 14 mm; Neck diam.. a) 26 mm, b) 28 mm, c) 44 mm; Neck ht.: 102 mm; Body diam.: a) 118 mm, b) 110 mm, c) 102 mm; Body ht.: 90 mm; Base diam.: 101-5 mm; Basal profile ht.: 32 mm; Pontil mark diam.: 29 mm; Bottle ht.: 242 mm; Wt.: 28.4 oz; Vol.: 30.5 oz.

Figure 24a. French dark green glass liquor bottle, variation II: wide neck. For specific details and dimensions see Figure 24b. (1F4F12-1; RA-2256 B)

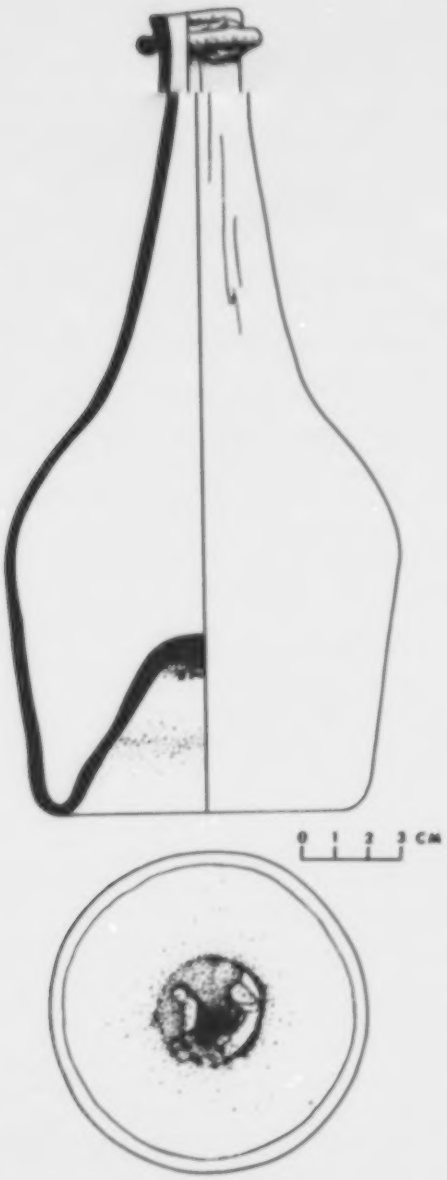


Figure 24b. This specimen has a wider neck than usual, but its finish and body are typical, and its rounded cone-shaped basal profile with a glass-tipped pontil mark is common. (1F4F12-1) Colour: 2.5GY; Lip diam.: 28 mm; Lip ht.: 5.5 mm; Bore diam.: 17 mm; String rim diam.: 37 mm; String rim ht.: 6-10 mm; Finish ht.: 13-15 mm; Neck diam.: a) 24 mm, b) 36 mm, c) 60 mm; Neck ht.: 105 mm; Body diam.: a) 118 mm, b) 111 mm, c) 106 mm; Body ht.: 80 mm; Base diam.: 104 mm; Basal profile ht.: 47 mm; Pontil mark diam.: 32 mm; Bottle ht.: 238 mm; Wt.: 25.4 oz; Vol.: 30 oz.

Figure 25a. French dark green glass liquor bottle, variation II: wide neck. For specific details and dimensions see Figure 25b. (1F4E34-1; RA-2253 B)

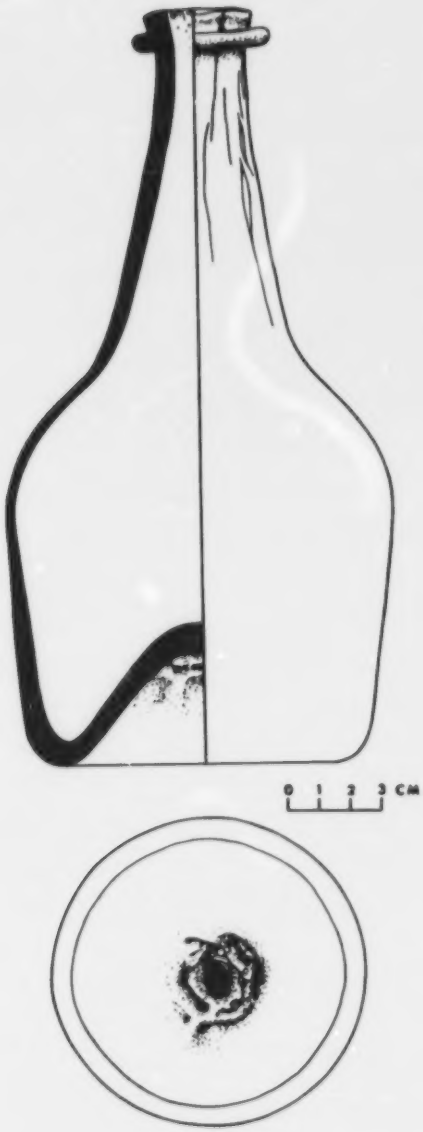


Figure 25b. This specimen has a wider neck than usual, but its finish and body are typical, and its rounded cone-shaped basal profile is common. A circular push-up mark may also be present. (1F4E34-1) Colour: 2.5GY; Lip diam,: 32-34 mm; Lip ht.: 5 mm; Bore diam.: 18 mm; String rim diam.: 42-44 mm; String rim ht.: 6 mm; Finish ht.: 12 mm; Neck diam.: a) 28 mm, b) 42 mm, c) 60 mm; Neck ht.: 110 mm; Body diam.: a) 119 mm, b) 114 mm, c) 107 mm; Body ht.: 85 mm; Base diam.: 108 mm; Basal profile ht.: 37 mm; Push-up mark diam.: 15 mm?; Pontil mark diam.: 27 mm; Bottle ht.: 243 mm; Wt.: 31.4 oz; Vol.: 32.5 oz.

Figure 26a. French dark green glass liquor bottle, variation III: crude craftsmanship. For specific details and dimensions see Figure 26b. (1F4E20-1; RA-2258 B)

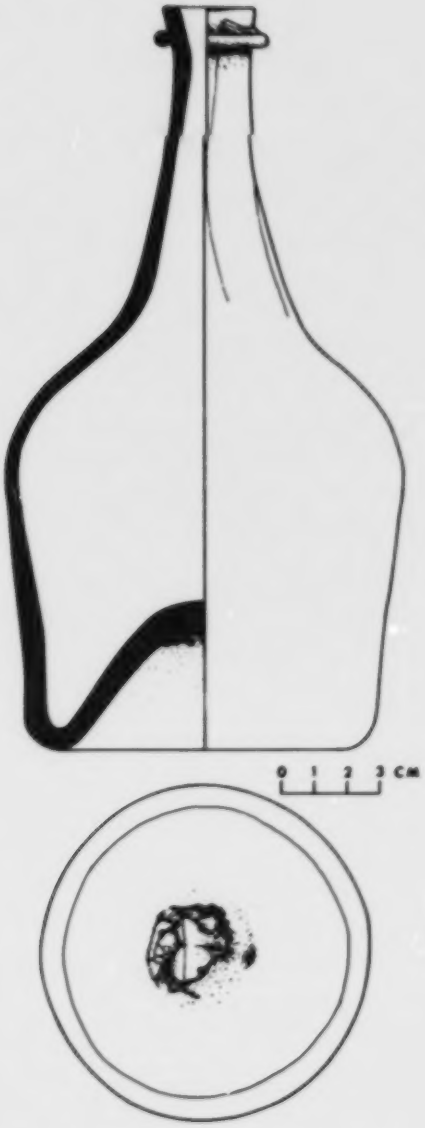


Figure 26b. This crude specimen has a short, narrow neck in relation to its body, but its form is basically typical, and its rounded cone-shaped basal profile with a glass-tipped pontil mark is common. (1F4F20-1) Colour: 10Y; Lip diam.: 29 mm; Lip ht.: 6-8 mm; Bore diam.: 19 mm; String rim diam.: 35.5 mm; String rim ht.: 5 mm; Finish ht.: 12 mm; Neck diam.: a) 24 mm, b) 31 mm, c) 58 mm; Neck ht.: 100 mm; Body diam.: a) 119 mm, b) 115 mm, c) 105 mm; Body ht.. 90 mm; Base diam.: 105 mm; Basal profile ht.: 37 mm; Pontil mark diam.: 27 mm; Bottle ht.: 225 mm; Wt.: 27.5 oz; Vol.: 30.5 oz.

Figure 27a. French dark green glass liquor bottle, variation III: crude craftsmanship. For specific details and dimensions see Figure 27b. (1F4E40-4; RA-2252 B)

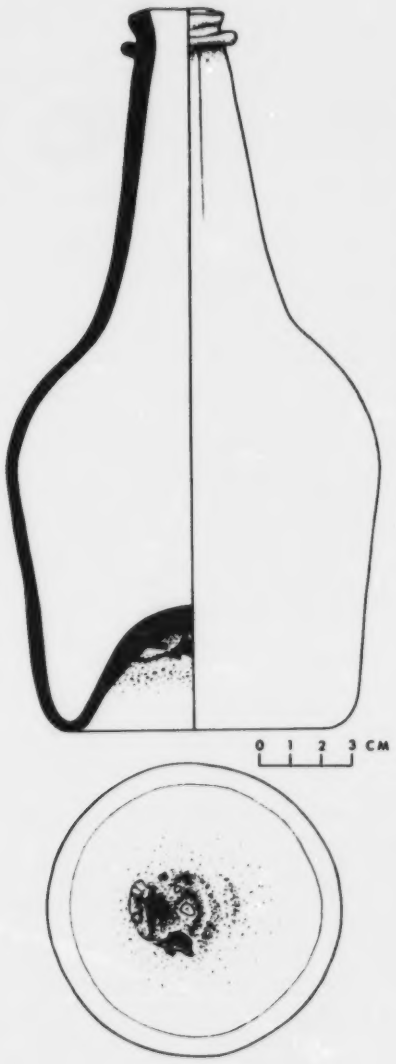


Figure 27b. This crude specimen has a wide, heavy neck in relation to its body, and the poorly made finish displays groove-like impressions above and below the string rim, probably from the "pince" (Fig. 18). Its form is basically typical, however, and its rounded cone-shaped basal profile with a glass-tipped pontil mark is common. (1F4E40-4) Colour: 2.5GY; Lip diam.: 32 mm; Lip ht.: 7-8 mm; Bore diam.: 17 mm; String rim diam.: 39 mm; String rim ht.: 5 mm; Finish height: 10-14 mm; Neck diam.: a) 31 mm, b) 48 mm, c) 62 mm; Neck ht.: 100 mm; Body diam.: a) 120 mm, b) 112 mm, c) 103 mm; Body ht.: 90 mm; Base diam.: 100 mm; Basal profile ht.: 34 mm; Pontil mark diam.: 35 mm; Bottle ht.: 234 mm; Wt.: 26.7 oz; Vol.: 29 oz.

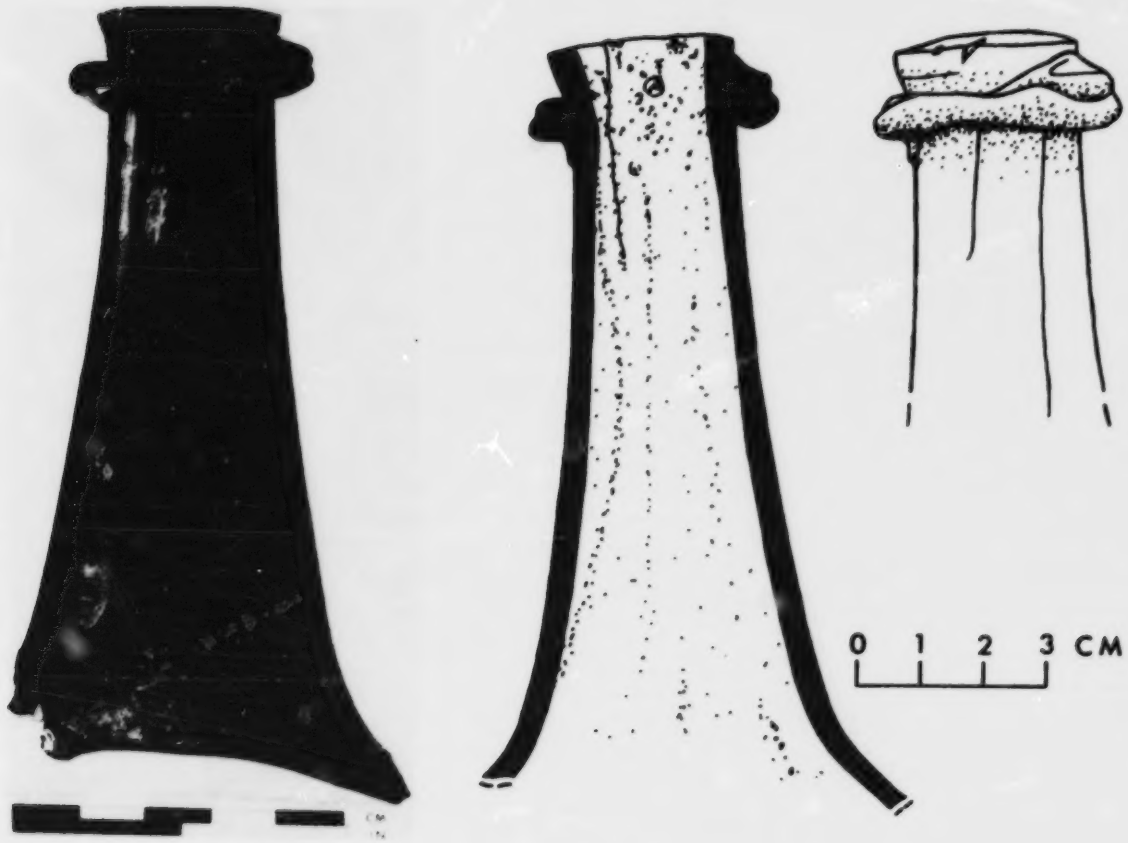


Figure 28. French dark green glass liquor bottle, variation III: crude craftsmanship. This specimen has a crudely made string rim, but its form is fundamentally typical. (1F4E36-4; RA-2246 B) Colour: 2.5GY; Lip diam.: 29 mm; Lip ht.: 4-8 mm; Bore diam.: 19 mm; String rim diam.: 38 mm; String rim ht.: 5-11 mm; Finish ht.: 14-16 mm; Neck diam.: a) 26 mm, b) 34 mm, c) 55 mm; Neck ht.: 110 mm.

Figure 29a. French dark green glass liquor bottle, variation IV: the shortest example. For specific details and dimensions see Figure 29b. (1F4E32-3; RA-2255 B)

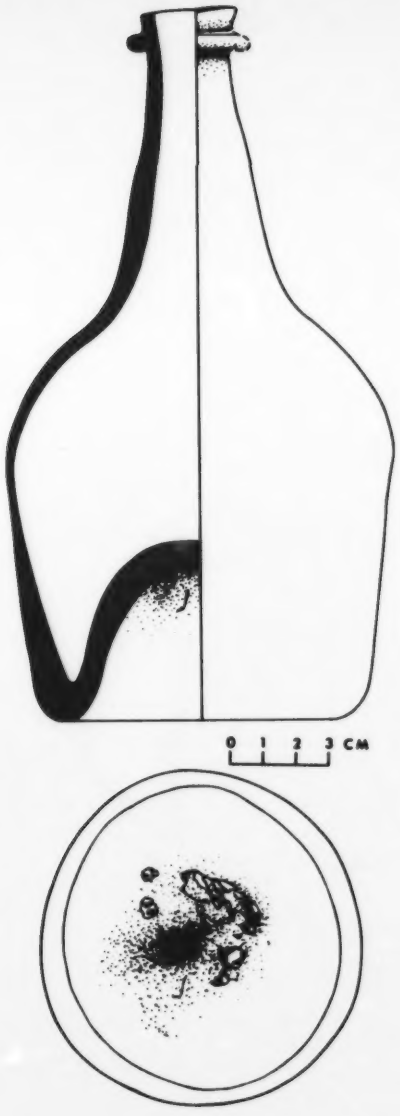


Figure 29b. This specimen, the shortest in the collection, has a typical finish, neck and body, and displays a common rounded cone-shaped basal profile with a glass-tipped pontil mark, which in this case has turned an opaque blue from an undetermined chemical reaction. (1F4E32-3) Colour: 2.5GY; Lip diam.: 30 mm; Lip ht.: 6-7 mm; Bore diam.: 20 mm; String rim diam.: 37.5 mm; String rim ht.: 5-6 mm; Finish ht.: 12-14 mm; Neck diam.: a) 25 mm, b) 39 mm, c) 55 mm; Neck ht.: 90 mm; Body diam.: a) 117 mm, b) 112 mm, c) 105 mm; Body ht.: 80 mm; Base diam.: 100-8 mm; Basal profile ht.: 45 mm; Pontil mark diam.: 30 mm; Bottle ht.: 215 mm; Wt.: 27.5 oz; Vol.: 28 oz.

Figure 30a. French dark green glass liquor bottle, variation V: the tallest example. For specific details and dimensions see Figure 30b. (1F4E20-2; RA-2249 B)

Figure 30b. This specimen, the tallest in the collection, has a typical finish, neck and body, and displays a common rounded cone-shaped basal profile with a glass-tipped pontil mark. (1F4E20-2) Colour: 10Y; Lip diam.: 34.5 mm; Lip ht.: 6-8 mm; Bore diam.: 23 mm; String rim diam.: 41 mm; String rim ht.: 5- 7 mm; Finish ht.: 12 mm; Neck diam.: a) 30 mm, b) 39 mm, c) 60 mm; Neck ht.: 115 mm; Body diam.: a) 120 mm, b) 119 mm, c) 113 mm; Body ht.: 90 mm; Base diam.: 104-13 mm; Basal profile ht.: 43 mm; Pontil mark diam.: 27 mm; Bottle ht.: 255 mm; Wt.: 28.5 oz; Vol.: 33 oz.

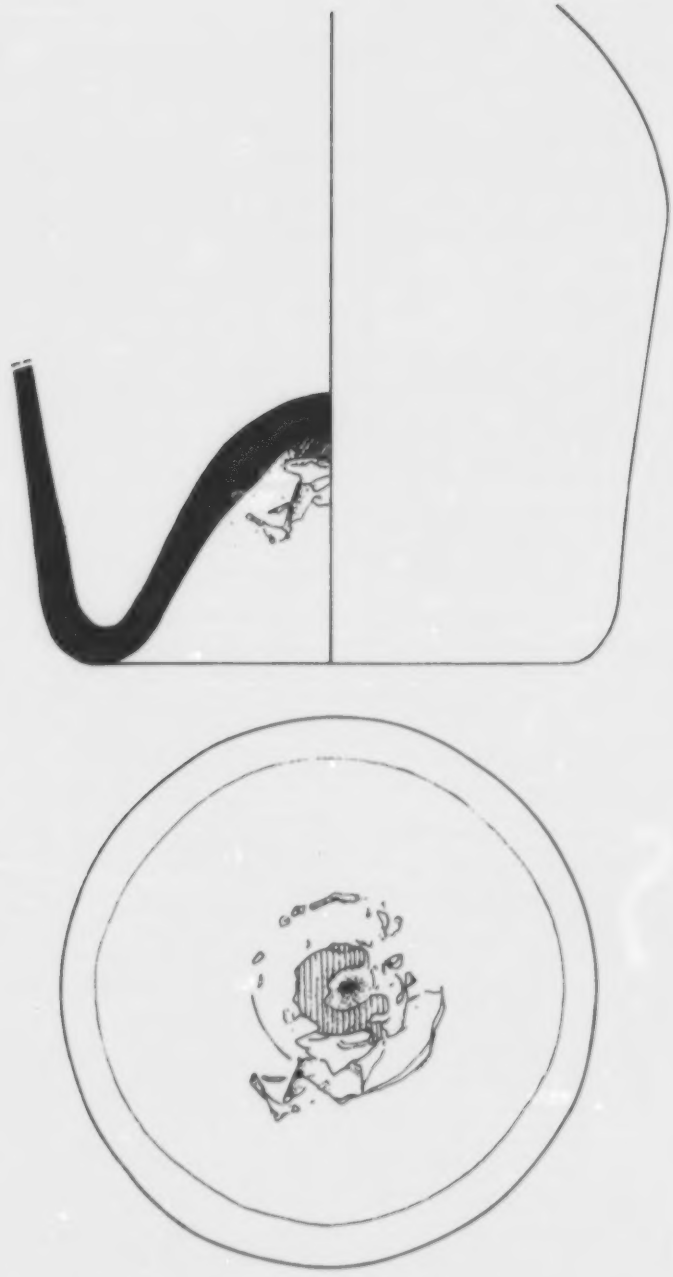


Figure 31. French dark green glass liquor bottle, variation VI: push-up mark type. This specimen has a typical body shape and a common rounded cone-shaped basal profile with a glass-tipped pontil mark, but it also displays a less common ring-shaped push-up mark covered with an iron oxide deposit. (1F4E47-6) Colour: 2.5GY; Body ht.: 85 mm; Base diam.: 105 mm; Basal profile ht.: 43 mm; Push-up mark diam.: 15 mm; Pontil mark diam.: 30 mm. (X4/5)

Figure 32. French dark green glass liquor bottle, variation VI: push-up mark type. This base has a common rounded cone-shaped basal profile with a glass-tipped pontil mark, but also displays a less common circular push-up mark. (1F4G8-2) Colour: 2.5GY; Base diam.: 110 mm approx.; Basal profile ht.: 45 mm; Push-up mark diam.: 8 mm; Pontil mark diam.: 26 mm. (1:1 scale)

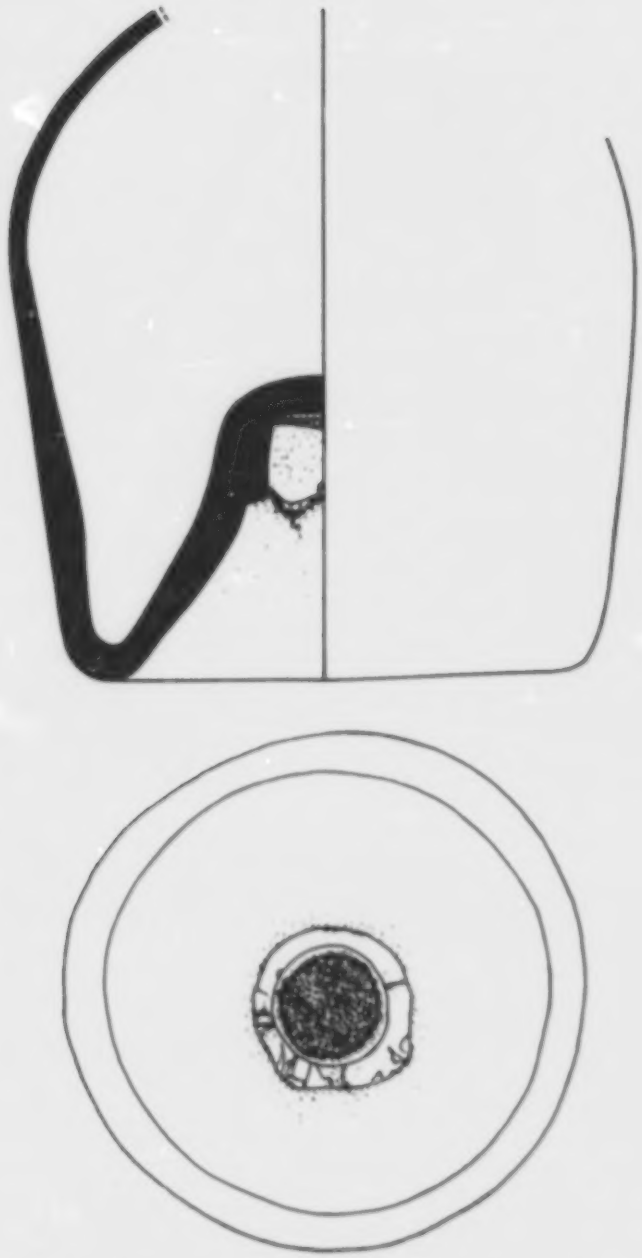


Figure 33. French dark green glass liquor bottle, variation VII: basal profile and pontil-mark type. This specimen has a typical body shape, but its bell-shaped basal profile and ring pontil mark are less common. (1F4E18-1) Colour: 2.5 GY; Body diam.: a) 120 mm, b) 114 mm, c) 108 mm; Body ht.: 90 mm; Base diam.: 106 mm; Basal profile ht.: 50 mm; Pontil mark diam.: a) 35 mm; b) 22 mm. (X3/5)

Figure 34. A regular-sized French dark green glass liquor bottle, and what is believed to be its half-sized counterpart. A quarter-sized bottle in this style is also present in the collection (Fig. 35a-36). (1F4E47-13; 1F4G8-5; RA-866 T)

Figure 35a. Group I: possible quarter-sized French liquor bottle. For specific details and dimensions see Figure 35b. (1F11A3-1; RA-2015 B)

Figure 35b. Group I: This possible quarter-sized French liquor bottle resembles the larger bottles in style, but its glass is thin, fragile and a lighter green. (1F11A3-1) Colour: 10GY; Lip diam.: 23 mm; Lip ht.: 4 mm; Bore diam.: 16 mm; String rim diam.: 27-29 mm; String rim ht.: 3-6 mm; Finish ht.: 9 mm; Neck diam.: a) 20 mm, b) 23 mm, c) 31 mm; Neck ht.: 63 mm; Body diam.: a) 78 mm, b) 76 mm; Body ht.: 45 mm; Base diam.: 78 mm; Bottle ht.: 145 mm.

Figure 36. Group I: possible quarter-sized French liquor bottles. This specimen resembles the larger bottles in style, but its glass is thin, fragile and a more yellow green. The rounded cone-shaped basal profile with a glass-tipped pontil mark is common, but the two pointed push-up marks are unique. (1F4G9-3) Colour: 10Y; Lip diam.: 27 mm; Lip ht.: 6 mm; Bore diam.: 20.5 mm; String rim diam.: 31 mm; String rim ht.: 3-5 mm; Finish ht.: 11-12 mm; Neck diam.: a) 21 mm. b) 25 mm, c) 35 mm; Neck ht.: 60 mm; Body diam.: a) 76 mm, b) 74 mm, c) 70 mm; Body ht.: 52 mm; Base diam.: 68 mm; Basal profile ht.: 17 mm; Pontil mark diam.: 17 mm; Bottle ht.: 162 mm.

Figure 37. Group II: possible half-sized French liquor bottle. This specimen closely resembles the larger French liquor bottles. It is currently on display at Fort Amherst, P.E.I. (1F4G8-5; RA-1502 B) Colour: 10Y; Lip diam.: 22 mm; Lip ht.: 0-5 mm; Bore diam.: 13 mm; String rim diam.: 28-30 mm; String rim ht.: 5-9 mm; Finish ht.: 8-12 mm; Neck diam.: a) 22 mm, b) 25 mm, c) 40 mm; Neck ht.: 85 mm; Body diam.: a) 87 mm, b) 84 mm, c) 82 mm; Body ht.: 60 mm; Base diam.: 81 mm; Basal profile ht.: 35 mm; Pontil mark diam.: 22 mm; Bottle ht.: 187 mm.

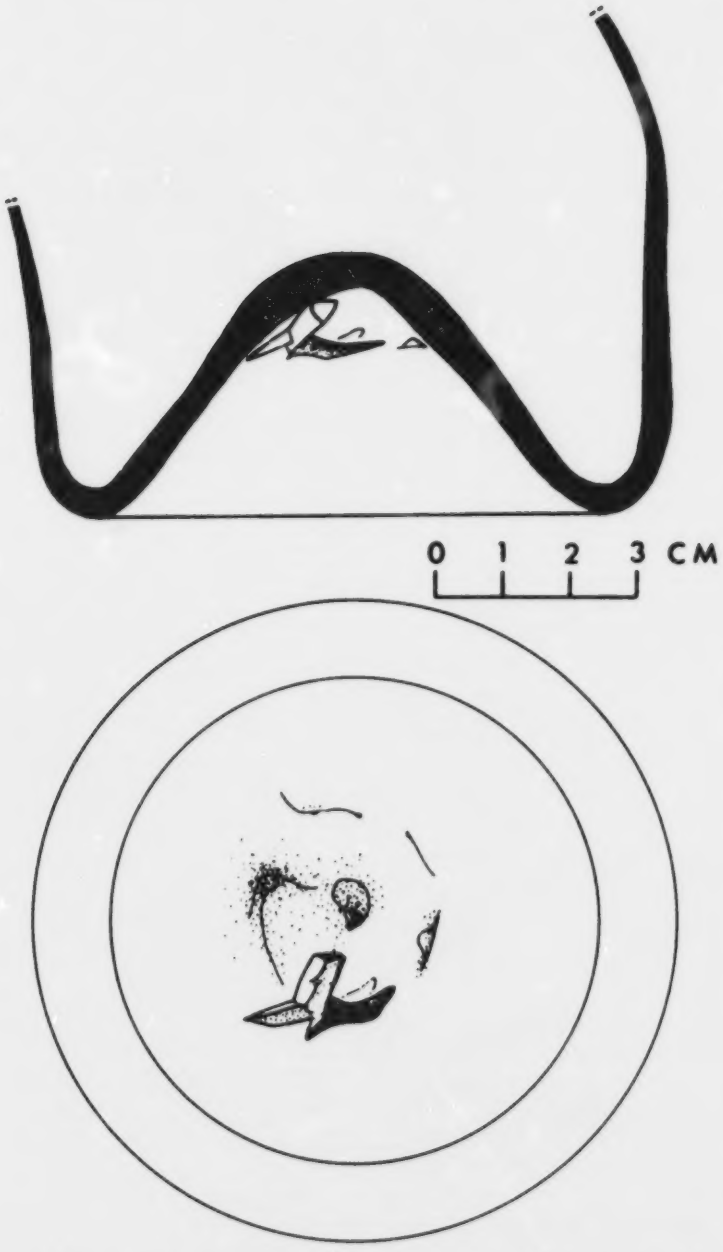


Figure 38. Group II: possible half-sized French liquor bottle. This specimen closely resembles the larger bottles in glass quality as well as form. It displays a common rounded cone-shaped basal profile with a glass-tipped pontil mark, and a circular push-up mark. (1F4E20-5) Colour: 2.5GY; Body diam.: a) 95 mm, b) 93 mm, c) 92 mm; Body ht.: 50 mm; Base diam.: 92 mm; Basal profile ht.: 32 mm; Push-up mark diam.: 8 mm; Pontil mark diam.: 28 mm.

ENGLISH "BLACK" GLASS LIQUOR BOTTLES

Industrial and Bottle History

Although glass bottles were being made in England as early as the 13th century (Powell 1923: 70), the production of so-called "black" glass bottles did not begin until the mid-17th century (McKearin and McKearin 1948: 423). The new industry expanded rapidly, and by 1696, 42 out of 90 glasshouses were producing 240,000 dozen bottles per year, enough to supply almost the entire needs of the home market and to obviate the need to import from other countries. Most of these glasshouses were centred in London and Bristol, while others were located in 14 countries (Noël Hume 1961: 93, 94 from Houghton 1727: No. 197, No. 198). As the demand for these strong glass bottles increased, production further expanded in the 18th century, with London and Bristol again being the site of many of the new factories (Powell 1923: 86-102).

During this entire period the bottles were used primarily as carrying, storage and serving vessels for a variety of alcoholic beverages, but they often contained food and other products as well. Although their function remained generalized until the late 19th century, their shape underwent considerable change. Most noticeable was their body shape, which evolved from squat and globular to tall and cylindrical. Necks also became taller and straighter. The finish changed from the cracked-off or everted lip with an applied string rim to the thickened mouth. Basal indentations became shallower.

Coinciding with this change of shape was the practice of bottling and binning alcoholic beverages (rather than transferring them from wooden barrels) and storing the bottles on their sides. Straight-sided cylindrical bottles facilitated this process; greater numbers of bottles could be more efficiently stored and their corks could be kept moist to ensure a better seal and consequently a better product. Although some alcoholic beverages had been binned as early as 1676, they were stored in an inverted position on shelves in which holes had been drilled to accommodate their necks. These early bottles were globular, and this method was certainly the most practical way of handling them. Bottles were occasionally stored on their sides during this early period as well, but the practice was not widespread until the mid-18th century, by which time the binning of all liquors had become common, and bottles were becoming more cylindrical (McKearin 1971: 126, 127).

The Fuel, Furnace and Factory

The success of the English bottle glass industry was definitely linked to the type of fuel that was used and to the design of both furnace and factory. In combination they efficiently produced a type of glass that was dark, strong and very popular.

English "black" glass bottles were the product of coal-fired furnaces. Coal was a new form of fuel in the early 17th century, but its use was common after 1615 when the use of wood was prohibited by royal proclamation because of the depletion of the forests (Thorpe 1969: 66).

The type of furnace that was adopted to most efficiently utilize the new fuel was square or rectangular, had fire grates open at both ends and extending from one extremity of the furnace to the other and an underground flue that supplied a very strong draught by allowing cooler air from outside the shop to travel through a tunnel into the furnace. Because of the strong draught higher temperatures could be achieved in the melting furnace, thus reducing the time needed to liquify the batch and requiring less coal to be burned.

The burning of coal presented problems as well, however; obnoxious sulphurous fumes that inconvenienced the glassworkers were produced. The design of the glass shop remedied the situation. In shape the factory resembled a large inverted funnel. While glass was being melted, all the windows and doors were closed. The only way air could enter the shop was through the tunnelled drafts of the furnace, and the only way it could leave was through the chimney in the shop's roof. The resulting updraft quickly removed the coal fumes and smoke from the workroom (Scoville 1950: 41, 42).

The Roma Site Bottles

Origin and Dating

The "black" glass liquor bottles from the Roma site are believed to be of English origin since they resemble the type of bottles being manufactured in that country during the early to mid-18th century. Similar bottles have also been unearthed from archaeological sites in both England and its American colonies. Although certain features of the Roma site specimens resemble those of bottles manufactured between 1715 and 1735, they are most similar to bottles dating from 1725 to 1730 (McKearin and McKearin 1948: 424, 425). This judgement is made on the basis of bottles bearing dated seals.

Manufacture and Resulting Physical Characteristics

The "black" glass liquor bottles from the Roma site have been entirely free-blown with only the traditional glassmaking tools. As a result, they are not uniform or identical, but their features are fundamentally alike: their lips are cracked-off and occasionally fire-polished; their string rims are a band of glass applied close to the lip and tooled into a V shape; their necks are fairly short and taper toward the finish; their shoulders have a distinct curve; their bodies are short, basically cylindrical but occasionally possessing a slightly concave profile, and their diameters increase slightly toward the base; their heels are rounded and have some basal sag; their resting points are unsteady. Only in the shapes of their basal indentations and in the markings left by push-up and pontil tools do they differ significantly. Three basal profile shapes are evident, the dome, bell and rounded cone. Only the quatrefoil push-up mark and sand pontil mark are distinctly present. The various combinations of these features are illustrated in Figures 39-44b.

The following is a breakdown of the range of dimensions, quantities and types of features on the English "black" glass liquor bottles from the Roma site:

Sample: 19 diagnostic objects consisting of nine almost complete bottles, three additional finish fragments and seven additional base fragments
Colour: 1) 10Y (13); 2) 7.5Y (5); 3) 2.5GY (1)
Lip diam.: 25-29
Lip ht.: 1-6
Bore diam.: 15-21
String rim diam.: 31-36
String rim ht.: 3-8
Finish ht.: 6-12
Neck diam.: a) 24-26; b) 30-36; c) 50-55
Neck ht.: 1) 65 (1); 2) 70-80 (8)
Body diam.: a) 126-137; b) 131-142; c) 134-140
Body ht.: 60-70
Base diam.: 130-140
Basal profile type: 1) dome (7); 2) bell (4); 3) rounded cone (2)
Basal profile ht.: 1) dome: 30-27; 2) bell: 35-50; 3) rounded cone: 35-37
Push-up mark type: 1) quatrefoil: on dome (2?); on bell (3); on rounded cone (2?). 2) undetermined on dome (4); on bell (1)
Push-up mark diam.: 1) quatrefoil: on dome: 40?-47?; on bell: 35-40; on rounded cone: 37?-50?
Pontil mark type: 1) sand: on dome (5); on bell (4); on rounded cone (2). 2) undetermined: on dome (1)

Pontil mark diam.: 1) sand: on dome: 55?-62; on bell: 50-56; on rounded cone: 52-62
Bottle ht.: 163-176
Wt.: 28 oz avg.
Vol.: 26 oz avg.

Miscellaneous "Black" Glass Liquor Bottles

One partial bottle and two base fragments not belonging to any of the preceding categories are also present in the Roma glass collection. All are free-blown, represent cylindrical bottles and probably late in the 18th century.

The most complete specimen (Fig. 45) has a finish and neck similar to those on the English bottles discussed previously, but the string rim is downtooled and the neck is taller. The body is quite different from the English group - being taller, straighter, of a smaller diameter and probably blown in a dip mould - but the base has a similar high dome-shaped indentation and sand pontil mark. This combination of features suggests the bottle dates later than the 1725-30 group. According to McKearin's and Noël Hume's chronologies for "black" glass liquor bottles, it would probably date between 1730 and 1750 and be of English manufacture (McKearin and McKearin 1948: 424, 425; Noël Hume 1970: 65, 66).

The two base fragments (Figs. 46 and 47) appear to be of a later date as well, judging from their smaller base diameters and shallower dome-shaped basal indentations. Both exhibit sand pontil marks and possibly were manufactured in England.

Figure 39. A typical example of an English "black" glass liquor bottle dating from 1725-30. This specimen is on display at Fort Amherst, P.E.I. (1F4G8-6 RA-1334 B) Colour: 10Y; Lip diam.: 26-27 mm; Lip ht. 2-3 mm; Bore diam.: 17-18 mm; String rim diam.: 32-34 mm; String rim ht.: 6 mm; Finish ht.: 8-9 mm; Neck diam.: a) 25 mm, b) 35 mm, c) 50 mm; Neck ht.: 70 mm; Body diam.: a) 127 mm, b) 133 mm, c) 135 mm; Body ht.: 70 mm; Base diam.: 132 mm; Basal profile type: bell; Basal profile ht.: 48 mm; Push-up mark type: quatrefoil; Push-up mark diam.: 40 mm; Pontil mark type: sand; Pontil mark diam.: 50 mm; Bottle ht.: 168 mm.

Figure 40a. An English "black" glass liquor bottle with a downtooled string rim, but otherwise typical of the 1725-30 period. For specific dimensions and variation of basal indentation, push-up mark and pontil mark see Figure 40b. (1F4E47-24; RA-2016 B)

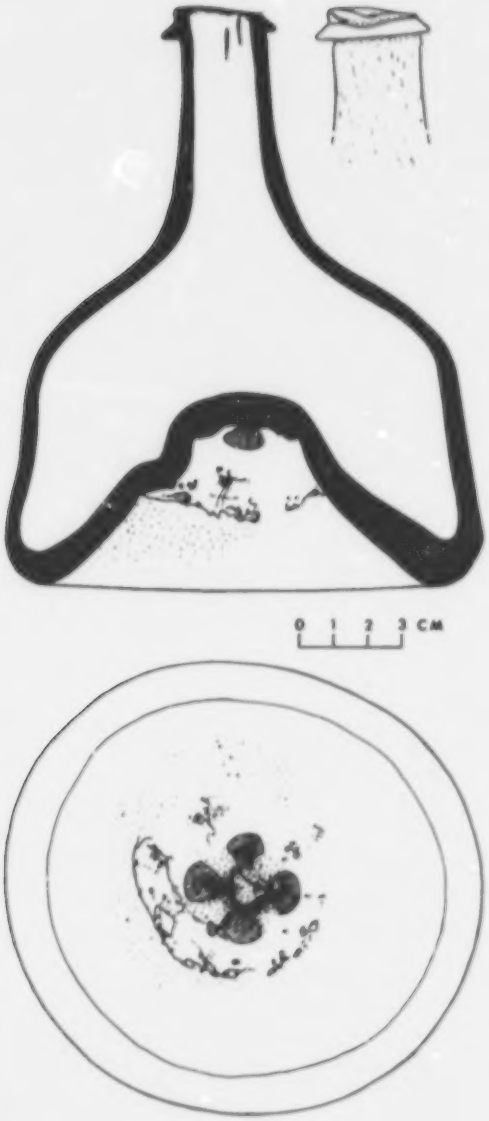


Figure 40b. A specimen with a bell-shaped basal profile, distinct quatrefoil push-up mark, the impressions of which are covered with an iron oxide deposit from the tool, and sand pontil mark. (1F4E47-24) Colour: 10Y; Lip diam.: 27-29 mm; Lip ht.: 1-4 mm; Bore diam.: 18 mm; String rim diam.: 34 mm; String rim ht.: 4.5 mm; Finish ht.: 6- 9 mm; Neck diam.: a) 26 mm, b) 30 mm. c) 50 mm; Neck ht.: 70 mm; Body diam.: a) 126 mm, b) 131 mm, c) 138 mm; Body ht.: 70 mm; Base diam.: 128-137 mm; Basal profile ht.: 48 mm; Push-up mark diam.: 35 mm; Pontil mark diam.: 55 mm; Bottle ht.: 172 mm; Wt.: 33.2 oz; Vol.: 22 oz.

Figure 41a. A typical English "black" glass liquor bottle of 1725-30. For specific dimensions and variation of basal indentation, push-up mark and pontil mark see Figure 41b. (1P4G4-3; RA-2017 B)

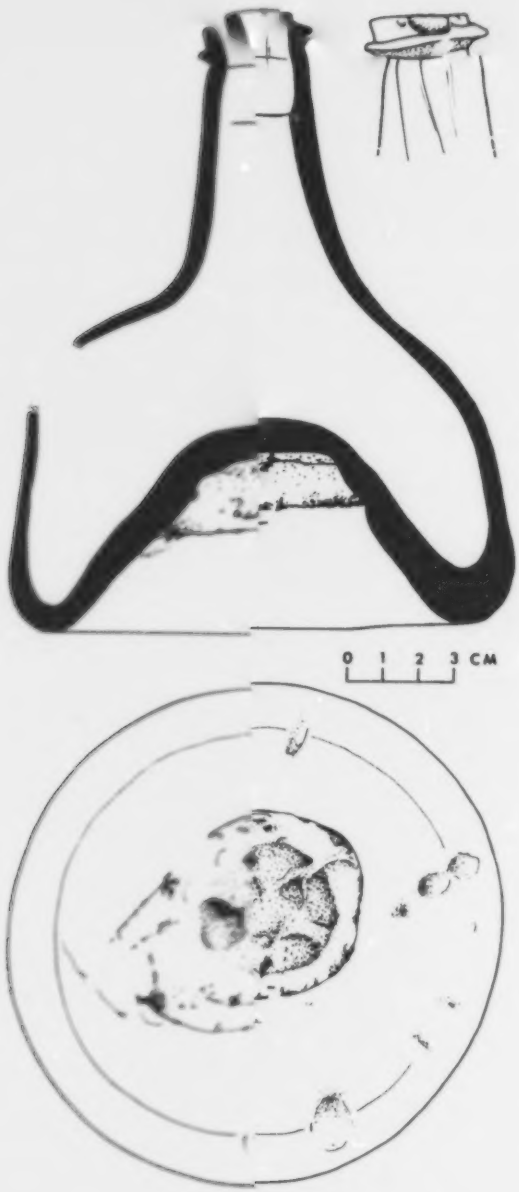


Figure 41b. A specimen with bell-shaped basal profile, quatrefoil push-up mark without an iron oxide deposit and sand pontil mark. (1F4G4-3) Colour: 10Y; Lip diam.: 27-29 mm; Lip ht.: 3-6 mm; Bore diam.: 18-21 mm; String rim diam.: 32-34 mm; String rim ht.: 3-7 mm; Finish ht.: 9-11 mm; Neck diam.: a) 26 mm, b) 35 mm, c) 50 mm; Neck ht.: 75 mm; Body diam.: a) 128 mm, b) 137 mm, c) 138 mm; Body ht.: 70 mm; Base diam.: 138 mm; Basal profile ht.: 50 mm; Push-up mark diam.: 38 mm; Pontil mark diam.: 55 mm; Bottle ht.: 172 mm.

Figure 42a. A typical English "black" glass liquor bottle of 1725-30. For specific dimensions and variation of basal indentation, push-up mark and pontil mark see Figure 42b. (1F4E39-13; RA-2018 B)

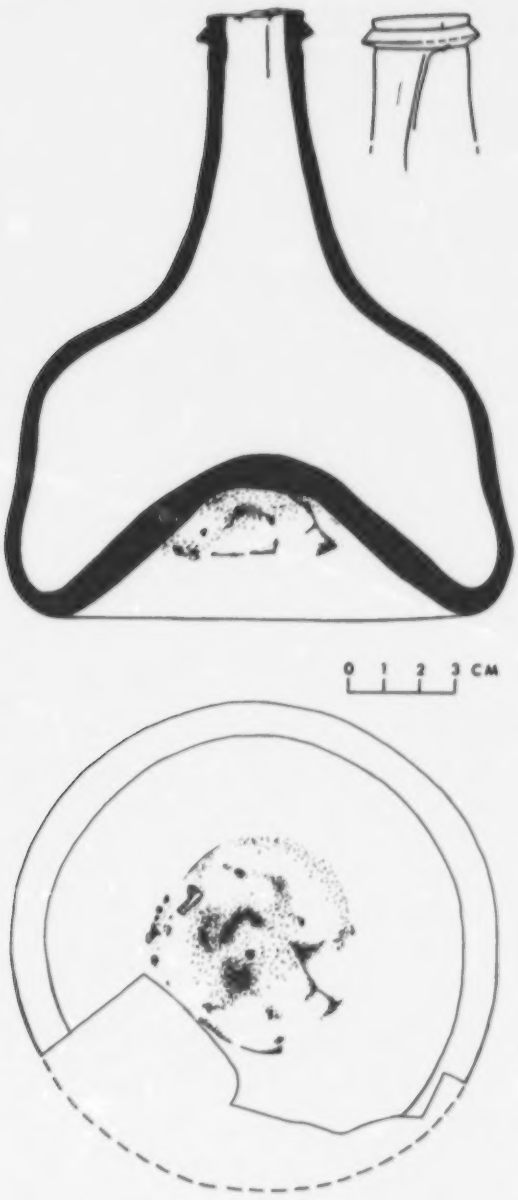


Figure 42b. A specimen with a rounded cone-shaped basal profile, possibly a quatrefoil push-up mark, and a sand pontil mark. (1F4E39-13) Colour: 10Y; Lip diam.: 26 mm; Lip ht.: 3-4 mm; Bore diam.: 17 mm; String rim diam.: 32 mm; String rim ht.: 5 mm; Finish ht.: 8 mm; Neck diam.: a) 25 mm, b) 34 mm, c) 55 mm; Neck ht.: 80 mm; Body diam.: a) 128 mm, b) 135 mm, c) 140 mm; Body ht.: 65 mm; Base diam.: 138 mm; Basal profile ht.: 37 mm; Push-up mark diam.: 37 mm?; Pontil mark diam.: 52 mm; Bottle ht.: 170 mm.

Figure 43a. A typical English "black" glass liquor bottle of 1725-30. For specific dimensions and variation of basal indentation, push-up mark and pontil mark see Figure 43b. (1F4G8-7; RA-2019 B)

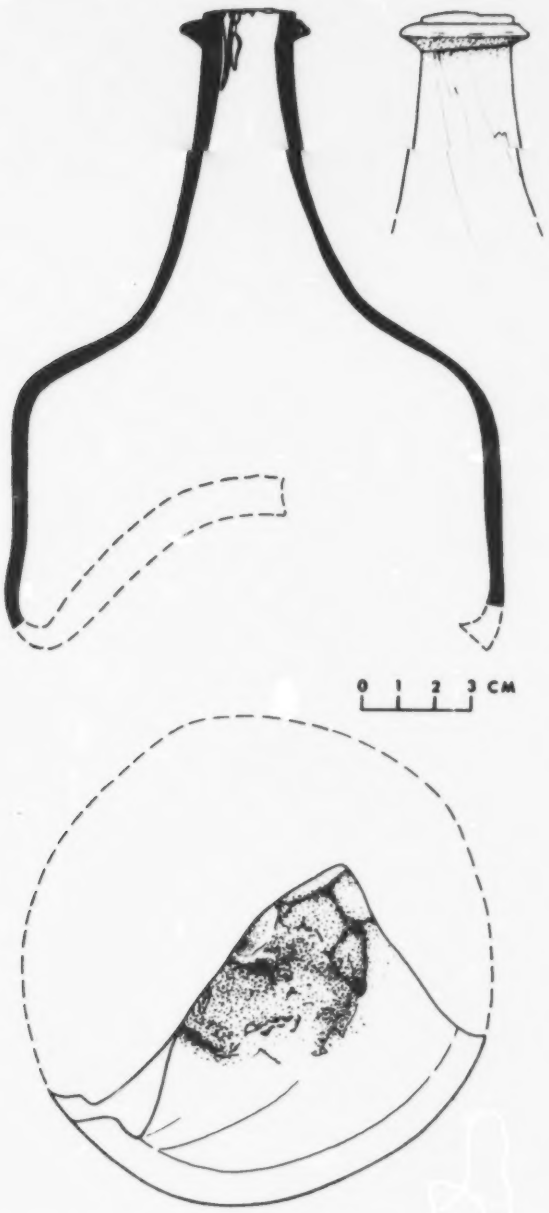


Figure 43b. A specimen with a dome-shaped basal profile, undetermined push-up mark and sand pontil mark. (1F4G8-7) Colour: 10Y; Lip diam.: 26 mm; Lip ht.: 2 mm; Bore diam.: 15 mm; String rim diam.: 35 mm; String rim ht.: 5-8 mm; Finish ht.: 7-10 mm; Neck diam.: a) 25 mm, b) 35 mm, c) 55 mm; Neck ht.: 75 mm; Body diam.: a) 130 mm, b) 135 mm, c) 139 mm; Body ht.: 70 mm; Base diam.: 130-139 mm; Pontil mark diam.: 62 mm; Bottle ht.: 176 mm.

Figure 44a. A slightly atypical English "black" glass liquor bottle of 1725-30. For specific dimensions see Figure 44b. (1F4B14-1; RA-2020 B)

Figure 44b. A short neck and slightly taller lip height make this specimen somewhat unusual. (1F4B14-1) Colour. 10Y; Lip diam.: 26 mm; Lip ht.: 5 mm; Bore diam.. 18 mm; String rim diam.: 31-33 mm; String rim ht.: 6-7 mm; Finish ht.: 11-12 mm; Neck diam.: a) 24 mm, b) 34 mm, c) 50 mm; Neck ht.: 65 mm; Body diam.: a) 137 mm, b) 142 mm, c) 140 mm; Body ht.: 60 mm; Base diam.: 140 mm approx; Bottle ht.: 163 mm.

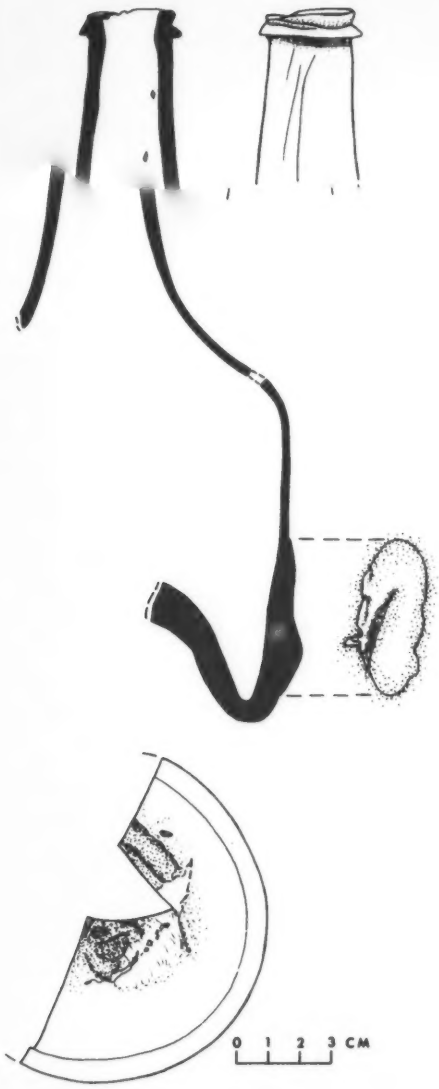


Figure 45. A miscellaneous "black" glass liquor bottle bearing some similarity to the earlier English bottles, but probably dates from 1730 to 1750. The large lump of glass on the lower body is merely a flaw. (1F4F47-1, 1F4F47-2) Colour: 10Y; Lip diam.: 28.5 mm; Lip ht.: 2-5 mm; Bore diam.: 20 mm; String rim diam.: 32 mm; String rim ht.: 4.5 mm; Finish ht.: 7-9 mm; Neck diam.: a) 25 mm, b) 32 mm, c) 55 mm; Neck ht.: 95 mm; Body diam.: a) 112 mm approx., b) 110 mm approx., c) 108 mm approx.; Body ht.: 100 mm; Base diam.: 105 mm; Basal profile type: dome; Basal profile ht.: 35 mm; Push-up mark type: indeterminate; Pontil mark type: sand; Pontil mark diam.: 60 mm; Bottle ht.: 225 mm approx.

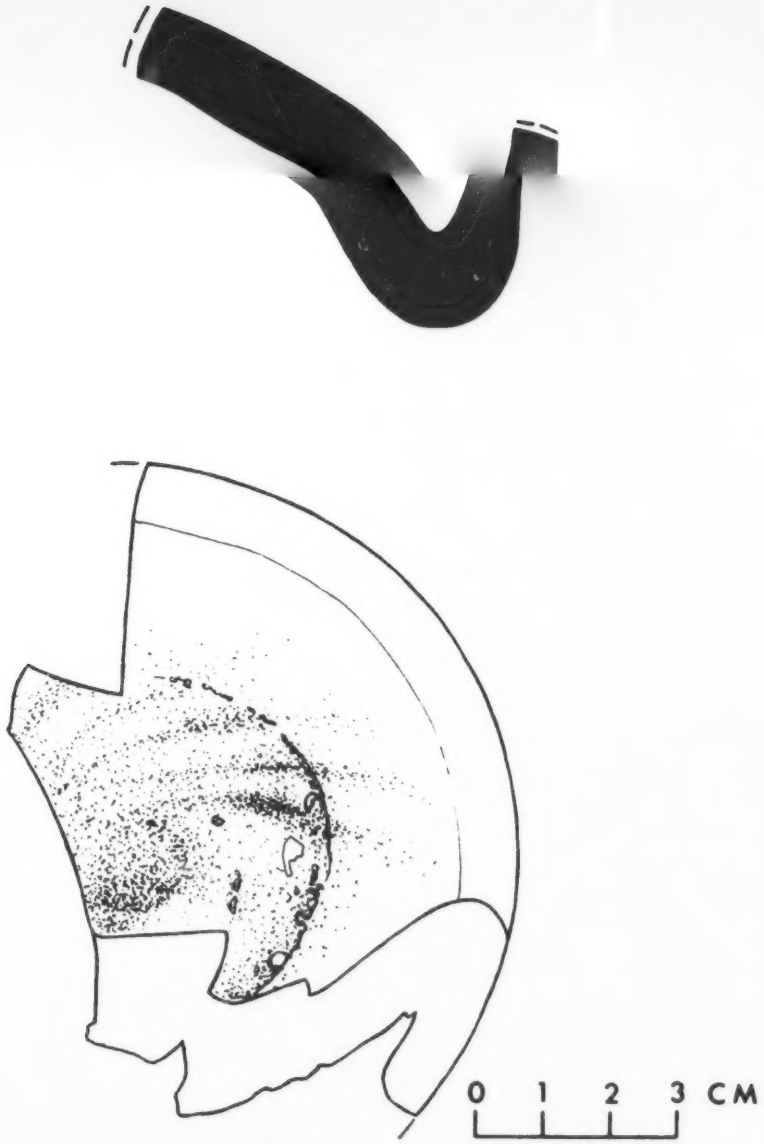


Figure 46. A miscellaneous "black" glass liquor bottle base whose small diameter and shallow dome-shaped profile with sand pontil mark indicate a date of manufacture later in the 18th century than the bottles in the preceding categories. (1F11F40-8) Colour: 7.5Y; Base diam.: 120 mm approx.; Basal profile ht.: 25 mm approx; Pontil mark diam.: 60 mm.

Figure 47. A miscellaneous "black" glass liquor bottle base whose small diameter and shallow dome-shaped profile with sand pontil mark indicate a date of manufacture later in the 18th century than the bottles in the preceding categories. (1F17G10-3) Colour: 7.5Y; Base diam.: 100 mm approx.; Basal profile ht.: 25 mm; Pontil mark diam.: 50 mm approx.

CONCLUSIONS

The Roma site has proved to be a valuable source for the study of 18th-century glass artifacts: it has yielded an important, representative sample of some of the principal types of container glass found on French and English historical sites in Canada. These specimens represent three distinct glassware types and manufacturing traditions in two different countries: (1) cylindrical blue-green containers of the French wood-burning tradition, (2) dark green liquor bottles of the French coal-burning tradition and (3) "black" glass liquor bottles of the English coal-burning tradition. These distinct glassware categories have resulted from a combination of factors including the type of fuel, furnace and factory employed, the method by which the containers were manufactured and the purpose for which they were intended.

Although distinct in these ways, the industries were interrelated in terms of economic and social stresses and their physical operation. Both the English and French manufacturers were forced to cut back on the use of wood because of its increasing scarcity, but it was the English who were innovators with coal and an efficient furnace and factory for burning it, and the French who were slow and inaccurate imitators of the technique. In both countries social pressure demanded the new but dissimilar bottles from the coal-fired furnaces and thereby assisted in the industries' expansion (to the detriment of the old wood-burning industry in France).

Knowledge of the background of the industries, as well as of the containers and the different methods used to fabricate them, has therefore been essential for a fuller understanding of the objects from the Roma site, for it was a combination of these aspects that produced the different types of containers with their unique physical characteristics. It is around this framework that the artifacts have been studied and dealt with in the text, and hopefully the information will prove useful in understanding and interpreting other sites.

A total of 153 diagnostic French and English objects were recovered from the Roma site. The majority of the material was French in origin. It accounted for 87.6% of the total and comprised 75.8% dark green liquor bottles, 7.2% cylindrical blue-green containers and 4.6% small liquor bottles. The specimens dated from either the period of occupation (1732-45) or earlier.

The English "black" glass liquor bottles accounted for 12.4% of the total, and although they were in use during the occupation period, they dated from 1725 to 1730 in terms of style. Trade between the mother countries was going on at

this time and the English bottles probably came to Canada via France.

In addition, three miscellaneous specimens were found. One of these appeared to be concurrent with the site since it was found in the storage cellar, while the other two fragments were probably of a later date. England may have been the origin of these three specimens.

Diagnostic objects were retrieved from the following structures in proportions that appear to be in accordance with the type of location:

Structure	French blue-green containers	French liquor bottles	French small liquor bottles	English liquor bottles	Misc. liquor bottles	Total
Storage cellar						
1F4	7	80	4	13	1	105
1F13 (part)						
Trash pit						
1F24	1	6	2	3		35
1F11 (part)	3	18		1	1	
Blacksmith shop						
1F23		3				5
1F11 (part)		1	1			
Company house						
1F15 (part)		1		2		4
1F11 (part)		1				
Unidentified French building no. 2						
1F17		2			1	3
General surface finds						
1F8		3				3
Test area, misc.						
1F13		1				1

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BOTTLE GLASS FROM A PRIVY AT FORT GEORGE MILITARY RESERVE, ONTARIO

Pierre Beaudet

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ABSTRACT

Sixty significant bottle glass artifacts were excavated from the large privy constructed in 1835 at the rear of the commandant's quarters at Fort George Military Reserve. They included numerous types of liquor bottles, egg-shaped soft drink bottles, oil and sauce containers, medicine vials and panelled rectangular bottles. Analysis of these artifacts showed that all were compatible with the dates of use of the structure (1835 to about 1853) which supports the archaeological evidence that they originated from a sealed context. The transformation occurring in glass technology and manufacturing during that period was also well exemplified by several of the vessels and fragments. Each of these bore the mark of glass-blowing techniques being gradually abandoned as well as the latest bottle manufacturing innovations of the day. While some bottles originated in England, others were possibly the product of American, European or Canadian glasshouses.

Submitted for publication 1974, by Pierre Beaudet, National Historic Parks and Sites Branch, Parks Canada, Ste.-Foy, Quebec.

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INTRODUCTION

This is a brief report on the glass bottles or fragments found in the large privy constructed south of the commandant's quarters at Fort George Military Reserve in southern Ontario (site 12H). The privy was built in 1835 and abandoned in the early 1850s (Henderson 1973: 53). During that period, the military compound was used for non-military purposes as Mr. John Powell and Mr. Louis Clement, both civilians, each occupied the commandant's quarters for several years.

The purpose of this report is to identify, group, describe and discuss all glass bottles or significant fragments discarded in the privy during the entire period of its existence. The period is of particular interest from the point of view of glass technology as new bottle-manufacturing techniques were being introduced while old ones were being abandoned or phased out. These techniques will be discussed briefly in the first chapter.

All artifacts are from proveniences 12H21A5 and 12H21A6, two sections of the privy separated by a wooden partition. The former provenience contained a great deal of ceramic material as well as glass, and other artifacts were also present. The excavation took place in the summer of 1970 and work was directed by Mr. James R. Henderson. The Nickerson Color Fan (Munsell Color Company) was used to determine colour. This was done under white fluorescent light. Bottle capacities, where measurable, are given in U.S. fluid ounces.

BOTTLE-MANUFACTURING TOOLS AND THEIR MARKS

It is through the recognition of mould, pontil or other manufacturing tool marks that bottles can often be identified regarding time and in some instances place of manufacture.

The pontil mark is the scar left on the base of a bottle by the pontil, a tool used to hold the container while its neck and finish are shaped. The pontil can be either a glass-tipped or sand, glass-tipped iron rod or a glass-tipped blowpipe used as a pontil (Jones 1971: 68). All three types of pontils usually leave easily identifiable scars or pontil marks. The glass-tipped pontil leaves excess glass or chips of glass on the whole empontilled surface, while the larger sand, glass-tipped pontil mark is a line of glass chips usually containing some grains of sand and a generally pebbly surface over the entire empontilled area. The blowpipe utilized as a pontil also leaves a distinct glass ring-shaped mark.

The use of pontils was generally phased out with the introduction of the snap case or sabot perhaps in the late 1840s and definitely by the early 1850s (McKearin 1970: 107). The snap case was a tool that held the bottle around the body without leaving any noticeable marks or scars.

In the 18th and early 19th centuries, the lips and rims of bottles were finished by fire-polishing or by using a pucella or other type of tool that, pressed against the different parts of the finish, gave the lip and string rim the desired shape. However, these operations were gradually phased out following the introduction of the finishing tool in England during the 1820s (Jones, personal communication). In the United States the first patents for finishing tools were granted in the mid-1850s. This tool consisted of a clamp that pressed against the soft hot glass of the finish and was turned horizontally to shape the lip and rim. A mandrel situated between the two jaws was introduced into the mouth of the bottle to prevent the glass from collapsing inward during the shaping of the finish (Toulouse 1969: 533). This tool made it possible to achieve an even, well-formed finish.

During the 19th century, numerous types of moulds were used for the hand blowing of bottles. These mould types most often left different and distinct mould seams, lines or other marks which, if properly identified, can indicate the dating and function of the glass artifacts studied. The dip, turn, two-piece, three-piece and Ricketts'-type mould all merit mention in the body of this report.

The dip mould is the simplest of bottle moulds. It consists of an open-topped, downward-tapered mould that shapes the body of the bottle leaving the base, shoulder and

neck to be shaped with hand tools. Apparently the dip mould was a transition manufacturing step for the black glass bottle between the free-blown bottles of the 17th and early 18th centuries and the sectional moulds of the 19th century (Toulouse 1969: 531). A dip-moulded bottle will generally present a more regular taper than the free-blown bottles.

The two-piece mould consists of two halves hinged together, thus shaping the body and usually the base, shoulder and even the neck of a bottle. A well-defined vertical mould seam indicates the height to which the mould extends. The two-piece mould avoids some of the limitations of the dip mould. It enables the use of letter plates within the mould and engraving of letters or decorations on the inside walls of the moulds themselves. Also, the two-piece mould permits the blowing of bottles in a much wider variety of shapes and designs.

The turn mould is a variant of both the two-piece and three-piece moulds. In either case the bottle is turned or rotated within the mould to obliterate mould seams. Nevertheless, even though no mould seams are apparent, numerous horizontal striations produced during rotation can often be noticed through careful examination of the artifact.

H. Ricketts' bottle mould is "An Improvement in the Art or Method of Making or Manufacturing Glass Bottles, such as are used for Wine, Porter, Beer or Cyder" (Great Britain. Patent Office 1857). It consists of a mould with three parts. The upper part has two pieces that shape the shoulder and the lower part of the neck. The lower part has only one piece and shapes the body of the bottle. This part, however, has an open space through which a mechanical pontil can shape the base of the bottle (McKearin 1970: 106). Ricketts' mould, and the three-piece mould for that matter, cause one horizontal line at the base of the shoulder and two vertical ones extending from the top of the body to the base of the neck. The three-piece mould, which is an outgrowth of the Ricketts' bottle mould, does not necessarily have provisions for a base plate to shape its bottom.

LIQUOR BOTTLES

There are 39 liquor bottles and fragments in the collection from this site. These vary greatly in shape, colour and manufacturing technique but certain similarities make it possible to group them more or less accurately. Apart from the Ricketts'-type mould bottles and the case or "gin" bottle, liquor bottles have been grouped and occasionally sub-grouped according to their characteristic finish, manufacturing technique, body shape and basal surface. It is thus possible that a bottle blown in a French glassworks may have been grouped with a similar bottle produced in England, Germany, the United States or elsewhere. There is no sure way of identifying the contents of a particular bottle, for illustrations of similar seal-bearing bottles have proven that specific types of bottles may have been used to contain different kinds of liquids (Shafer 1969: 139-43).

Case Bottles

Group 1

12H21A5-50 is an olive amber case or "gin" bottle (Fig. 1). The extant height of the bottle is 230 mm and its body (195 mm high) is tapered from the shoulder to the base. The body diameter just below the shoulder is 80 mm and at the base it is 59 mm. The neck of the bottle is short (25.4 mm), free-blown and slightly tapered while the lip (4.9 mm high) has added glass and is flanged. The base has a four-point resting heel, a slight (4-mm deep) push-up and a square moulded mark 14 mm wide. The bore diameter measures 18.5 mm and the bottle holds 26 oz when filled to a reasonable filling height.

The case bottle was introduced in the 17th century or even earlier and was originally free-blown and hand-tooled to form four flat sides (McNulty 1971: 105). It was produced in many countries including the United States, Great Britain, the Netherlands and most other European countries, rendering specific attribution or unmarked bottles extremely difficult.

In any event, 12H21A5-50 probably dates back to the mid-19th century, for it is dip moulded, strongly tapered, without a pontil mark and has a crudely flanged finish. It is impossible to date this bottle more precisely or give it a specific place of production.

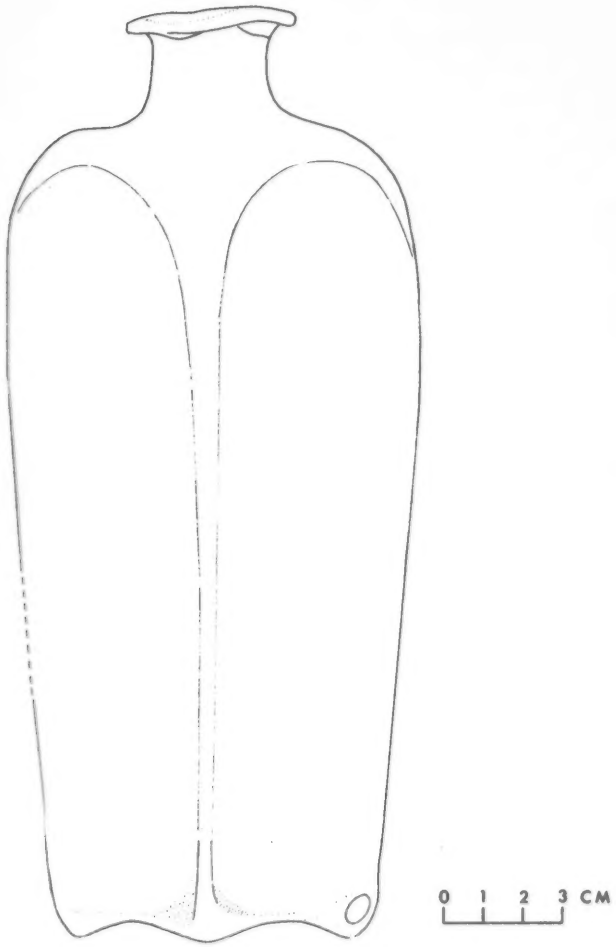

Figure 1. Dark green case or gin bottle. Hand-made flanged finish (12H21A5-50).

Group 2

Figure 2 (12H21A5-80) is a light yellowish green case bottle of unusually short size (only 115 mm high). Probably dip moulded, the bottle has a non-tapered body, a slightly rounded shoulder and a very short neck (11 mm high). The lip, made from added glass, has a flat upper surface, is downtooled and quite thick (34.2 mm in diameter compared to a bore diameter of 20.1 mm). A finishing tool may have been used. The lip is 10 mm high, the body diameter varies from 93 mm at the shoulder to 91 mm at the base. The base itself is 87 mm wide.

The basal profile has a four-point resting heel, a

slight push-up (13.5 mm) and a straight groove 20 mm long at the centre of the indentation. There is also a circular sand pontil mark 42 mm wide.

Plate 233 (No. 9) and the short accompanying text in McKearin and McKearin (1948: 430) is the only reference available concerning this type of case bottle. It is referred to as a small rum bottle but no reference is given to support this attribution. In fact, little can be said about this bottle except that it cannot be dated accurately or attributed to a particular glassworks.

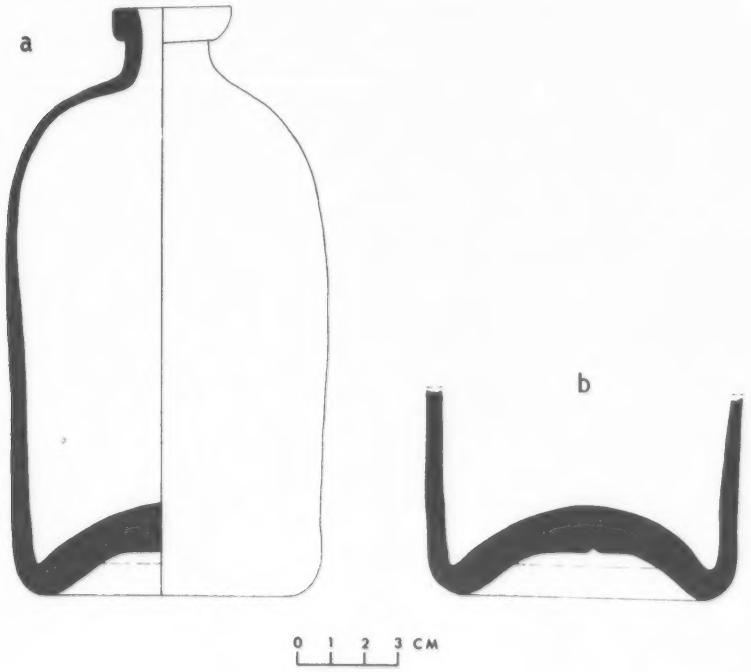

Figure 2. a, Short, light-green case bottle (12H21A5-80) and b, its base.

"Wine" Bottles

Group 1

The most distinctive of the "wine" bottles are tall and elongated. They have a flat laid-on string rim, a cracked-off lip, a more or less elongated shoulder and a slightly downward-tapered cylindrical body. No specific or widely used name seems to have been attributed to a particular group.

In 12H21A5 were found four complete bottles (12H21A5-52, -53, -54, -55), one bottle with a missing finish (12h21A5-56), four finish, neck and shoulder fragments (12H21A5-57, -58, -59, -60), four base and body fragments (12H21A5-61, -62, -63, -99), and finally, 111 body fragments (12H21A5-64). Except for the body fragments, these artifacts have been sub-grouped according to their finish, body and basal surface similarities.

Sub-group 1. Bottle 12H21A5-52 (Fig. 3), a moderate yellow green, is the only bottle that is tool finished and empontilled. Its shoulder is more elongated than the other bottles, while its body appears, because of regular horizontal striations, to have been turned in the mould. The base has a conical push-up with a slight ridge much like the green English style wine bottles of groups 2, 3 and 4.

The bore diameter of this bottle is 20 mm, the lip is 4 mm high and the string rim is 7.8 mm high. The band is flat. The body diameters are 82, 81.2 and 78.7 mm. The diameter of the base is 78 mm. The heel of the body is rounded and the push-up is 35.7 mm deep. The sand pontil mark is 14.5 mm wide and the bottle is 33 mm high.

The turn mould, it is said, became popular in the United States in the 1870s but probably was widely used in Germany for some time before that date (Toulouse 1969: 532). The finishing tool, however, appears to have been developed in England in the 1820s and in the United States by the early 1850s (Toulouse 1969: 533). These dates would easily allow the bottle to be dated toward the end of the occupation of the site, a short time after 1853.

Sub-group 2. This sub-group includes either two incomplete bottles or two base-body fragments (12H21A5-62, -99) and two finish-neck fragments (12H21A5-58, -60). It is possible, considering the similar colour and the small number of these bottles, that the four fragments belong to two bottles.

The two base and body fragments have been grouped because of their common colour (7.5GY, moderate yellow green) and their blowpipe pontil marks. Both neck and finish fragments share the particular colour of the bases and have a smoothness that sets them apart from the other neck and finish fragments.

Both bottles were probably manufactured in dip moulds as indicated by their tapered bodies and surface texture. The two lower body diameters are 78.5 and 76.4 mm for 12H21A5-62 and 79 and 76 mm for 12H21A5-99.

Both bases have similar basal surfaces: rounded bell-shaped kick-up, ring-shaped pontil mark from the use of a blowpipe as pontil and a slight ridge. The push-up is 40.2 mm deep for 12H21A5-62 and 46 mm deep for 12H21A5-99; the pontil mark diameters are 27.5 mm for the former and

Figure 3. Tall, elongated "wine" bottle. Horizontal striations on body indicate use of a turn mould (12H21A5-52). Figure 4. Tall, elongated "wine" bottle (12H21A5-55).

27.3 mm for the latter. The distribution of glass at the heel is quite uneven.

The two neck and finish fragments have irregular string rims that are essentially flat. The rim of 12H21A5-58 is 5 mm from the edge of the lip and 8 mm high; the lip diameter of 12H21A5-60 is 27.5 mm and that of 12H21A5-58 is 29.4 mm. The bore diameters are 21.1 mm for 12H21A5-58 and 20 mm for 12H21A5-60. No particular dates can be attributed to the bottles other than those that apply to the use of the dip mould and the pontil. The latter would probably make the artifacts pre-date the middle of the 19th century.

Sub-group 3. This sub-group includes all the remaining bottles (12H21A5-53, -54, -55, [Fig. 4], and -56 which lacks a finish), the neck and finish fragments (-57, -59), and the base and body fragments (-62, -63). All these artifacts are light olive green and heavily patinated. The laid-on string rims are all flat and irregular. The

shoulders are less elongated than the one on bottle 12H21A5-52 (sub-group 1) and the bodies are tapered and dip-moulded. There are no pontil marks on the bases but all have basically rounded dome-shaped push-ups and rounded heels.

The finish of 12h21A5-55 stands out somewhat from that of the others as its lip is slightly everted and its flat band consistently wide. The following comparative table gives significant finish figures and evidence of this difference.

Table 1. Finish Dimensions for Sub-Group 3, Tall and Elongated Bottles (mm)

Artifact number	Bore diam.	String rim ht.	Lip to rim ht.	Finish ht.	First neck diam.
12H21A5-53	17.8	7.0	2.8	10.2	27.5
12H21A5-54	19.3	9.0	2.0	11.0	28.2
12H21A5-55	24.8	9.7	6.0	15.7	29.8
12H21A5-57	23.0	7.8	5.5	12.3	30.0
12H21A5-59	20.0	8.2	3.2	11.0	28.8

While 12H21A5-55 had the most noticeable finish, it is 12H21A5-56 that stands out the most in the base and body table (Table 2). Bottle 12H21A5-56 has the smallest base and body dimensions and the shallowest indentation of the six examples. Furthermore, it has a rocker type resting point (-53 does also) and a rounded lump of glass on the side of the push-up.

Table 2. Base and Body Dimensions for Sub-Group 3, Tall and Elongated Bottles (mm)

Artifact number	Body diam. 1 and 3	Body ht.	Base diam.	Indent ht.
12H21A5-53	84, 78	160	74	30.5
12H21A5-54	84.5, 78	164	74	41
12H21A5-55	84, 77	157	73.5	39.4
12H21A5-56	82, 76	162	72	22
12H21A5-61	--, 78	--	74.2	30.6
12H21A5-63	--, 78.4	--	74.2	31

The absence of a finish on -56 prevents a further

comparison but it is clear that although these bottles have been grouped, they are not without differences and could have originated from completely different manufacturers.

Conclusion. Bottles in Group 1 could have contained wine, oil or cognac, as illustrated in Shafter (1969: 141), and presumably other liquids as well. These bottles could have originated from completely different manufacturers. They were probably not manufactured in England because of the differences in body-shoulder shape and finish configuration between this group and the other "wine" bottles, which have been manufactured in the English tradition.

Bases have blowpipe and sand pontil marks or no pontil marks at all while the finishes have been either hand-tooled or formed with the aid of a finishing tool and the bodies dip- or possibly turn-moulded. This mixture of manufacturing techniques rendered impossible any attempt at dating these bottles as a group. It is, however, possible to fit all bottles within the period when the privy was in use, 1835 to about 1853.

Group 2. Ricketts' and Ricketts'-Type Mould Bottles

Two bottles bearing inscriptions relating to H. Ricketts are 12H21A5-51 (Fig. 5) and 12H21A5-79 (Fig. 6).

12H21A5-51 is a light green 34-oz bottle lettered H. RICKETTS & CO / GLASS WORKS BRISTOL on its base rim and PATENT on its shoulder. Its lip and string rim are downtooled and formed by a finishing tool. The lip height is 15 mm, the body height 152 mm and the base diameter 88 mm. The base is a shallow dome and has a faint mamelon and a sand pontil mark. The use of a finishing tool would probably enable us to date the manufacture of the bottle to the 1820s or later, that being the approximate date of introduction of such a tool. The patent for the mould was taken out in 1821; the latest date the bottle could have been manufactured is not certain for although the patent was in effect for 14 years, it is not known whether it was renewed. However, H. Ricketts & Co. amalgamated with another Bristol bottle-making firm, Powell Brothers, in 1853 so the bottle could not have been produced any later than that date (Powell 1923: 99).

Bottle 12H21A5-79 bears only the word PATENT on its shoulder. The bottle is yellowish green, it has a downtooled lip and string rim which are tool finished and a base diameter of 82 mm. The lip is 12 mm high, and the body 148 mm high. There is a conical push-up at the base of the bottle but no mamelon. The bottle has almost all the characteristics of the H. Ricketts' mould bottle and one would be tempted to list it as such; however, bottles bearing the word PATENT on their shoulders were made in

Figure 5. a, Ricketts' mould bottle with base lettering identifying manufacturer (12H21A5-51); b, basal view.
Figure 6. a, Ricketts'-type bottle bearing no base lettering (12H21A5-79); b, basal view.

American glasshouses in the 19th century notably in Philadelphia by Dyottville Glassworks about 1833-46, and in Pittsburg by Wm. McCully & Co. after 1841 (Noël Hume 1961: 105). A precise attribution to a particular glass manufacturer is thus rather difficult considering the proximity of the site to the United States and the Loyalist heritage of its occupants. A slight pontil mark would tend to lower the date of manufacture to the pre-1850s. It is at that time that the snap case started to replace the use of the pontil.

Group 3. Three-Piece Mould Bottles

The presence of three-piece mould lines is the main characteristic common to all eight olive green bottles or fragments listed in Table 3. Even though they were manufactured in the same manner as the Ricketts & Co. bottles (12H21A5-51 and -79), none of them can be identified as such. They are probably the product of similar moulds used with unequal results by other bottle manufacturers. A closer look at each bottle or fragment will give a clearer overall view of the artifacts.

Bottles 12H21A5-78 (Fig. 7) and -95 are the only bottles that have downtooled lips and string rims similar to the Ricketts'-type bottles. The absence of the base, body and much of the neck of the latter make a further comparison rather difficult but the neck follows the same tapered profile as Ricketts'-type necks. Bottle 12H21A5-78, however, has a slightly bulged neck and a rather short, wide body. Its heel and resting point are both round while its push-up is cone-shaped. There is no visible mould line on the heel but a mould-like ridge appears in the push-up 11 mm from the heel. There is also evidence of the use of a sand pontil.

Bottle 12H21A5-94 could be said to be somewhat similar to 12H21A5-78 for it is of the same size, but its neck and downtooled finish seem to have been shaped with little skill or care. Both are roughly finished, uneven and slanted to one side. The basal surface has a cone-shaped push-up, a sand pontil mark and a slight ridge halfway up the indent. There is also a mould line visible on part of the rounded heel. The shoulder mould lines are much the same as those of 12H21A5-78.

Bottles 12H21A5-68 (Fig. 8), -71 (Fig. 9) and -77 all present certain similarities with the Ricketts & Co. patent mould bottles. All three bottles have three-piece mould lines, tapered necks and basal configurations that resemble roughly those of the Ricketts' bottles.

The finish on 12H21A5-69 is tooled, the lip is flat and the string rim is downtooled. The vertical mould lines of this bottle extend 25 mm up its neck. Its basal markings are clear: one mould line on the edge of the base rim, another one 10 mm toward the centre from the resting point and a mamelon at the centre of the slight indent. There is no evidence of pontil use.

The tool finish of 12H21A5-71 is the only one of its type from the privy. It has a flattened lip separated by 4 mm from a flat string rim. The bottle is approximately the same size as 12H21A5-78 and -94. The features on the basal surface of this bottle are not well defined, but there is a mamelon at the centre of a dome-shaped push-up, a mould line at the rounded heel and another one 5 mm up the push-up.

12H21A5-77 lacks its finish. Its vertical mould lines

Table 3. Three-Piece Mould Bottles*; Table of Measurements**

Cat. No.	IA5 -68	IA5 -71	IA5 -77	IA5 -78	IA5 -94	IA5 -95	IA5 -96	IA5 -28	IA5 -51	IA5 -79
Bore diam.	22.8	20.0	--	20.0	22.5	--	--	--	19.0	20.0
String rim ht.	5.0	5.0	--	4.8	9.6	6.0	--	--	7.8	6.2
Finish ht.	20.3	21.2	--	17.0	23.6	20.0	--	--	22.8	18.2
1st neck diam.	26.2	26.0	28.6	25.0	27.0	--	--	25.6	30.6	31.0
3rd neck diam.	37.0	37.5	40.0	39.0	39.0	--	--	34.2	39.0	39.0
Body diam.										
number 1	84.5	95.1	83.2	94.5	94.0	--	--	79.0	95.7	90.0
number 3	81.0	93.0	80.1	92.0	92.0	--	80.5	77.5	92.0	85.0
Body ht.	165.0	115.0	154.0	120.0	120.0	--	--	92.0	152.0	148.0
Base diam.	79.0	91.5	75.0	91.0	90.0	--	78.0	74.0	88.0	82.0
Indent ht.	4.0	25.0	24.0	35.0	42.0	--	20.3	26.0	18.0	23.8
Bottle ht.	285.0	248.0	--	246.0	245.0	--	--	190.0	284.0	273.0
Volume	--	--	25 oz	26 oz	--	--	--	14 oz	34 oz	--

* 12H21A5-51 and -79 (the two Ricketts'-type mould bottles) are included in the table to facilitate comparison.
** Units are millimetres and ounces.

Figure 7. a, Three-piece mould bottle (12H21A5-78); b, basal view. Figure 8. a, Three-piece mould bottle (12H21A-68); b, basal view.

extend only 12 mm up the neck where a slight horizontal line encircles the neck. This line appears to correspond to the topmost part of the shoulder mould parts. It is not present on 12H21A5-68 or -94 but faintly on -51 and -95 and very faintly on -78 where it is 7 mm up the neck. The base markings of 12H21A5-77, like those of -71, are not as clear as those of -68. The rim mould line is visible only at certain parts of the heel while the mould line below the resting point is quite clear. A slight mamelon is visible at the top of a roughly conical push-up. There is no evidence of pontil use.

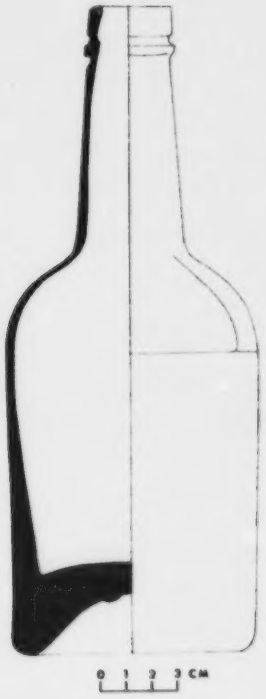

Figure 9. Three-piece mould bottle (12H21A5-71).

Base and body fragment 12H21A5-96 has a basal configuration much like that of 12H21A5-71. There is a dome-like push-up, a faint mamelon at its tip and even fainter mould lines at the heel and toward the inside of the push-up. Though the shoulder is absent, it is possible to list this fragment in this section through the similarity of its basal surface to that of the other bottles.

The last three-piece mould bottle to be found in the excavated privy is 12H21A6-28 (Fig. 10). It is a "half size" bottle whose finish is missing. The neck of the bottle is slightly bulged, the shoulder rounded and the body

cylindrical. It bears the characteristic three-piece mould lines. At the base of the neck is a depression 5 mm high. The basal surface reveals a partial mould line on the heel and another half way up the cone-shaped push-up. There are also marks that indicate the use of a sand pontil.

All these three-piece mould bottles, except for 12H21A5-68, lack the finished quality of the two embossed bottles (12H21A5-51 amd -79). No precise date can be attributed to them, although they probably post-date 1821. The presence of a pontil mark on four of the bottles (12H21A5-71, -78, -94 and 12H21A6-28) would probably make them pre-date the 1850s.

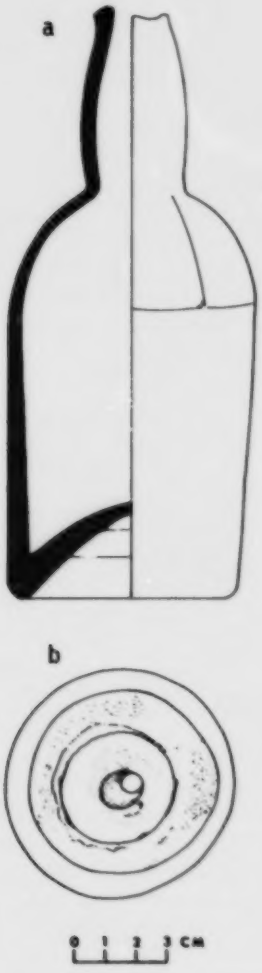

Figure 10. a, Three-piece mould "half size" bottle (12H21A6-28); b, basal view.

Group 4. Dip-Mould Bottles

This group of dark green, dip-mould "wine" bottles includes 14 main artifacts and numerous other small body fragments (Table 4). There are seven complete bottles (12H21A5-65, -66, -67, -69, -81, -83 and -91), one neck and finish fragment (-73), one body, shoulder, neck and finish fragment (-70), four base and body fragments (12H21A5-72, -98, 12H21A6-26 and -27), and one base, body and shoulder fragment (12H21A6-29). All are dark olive green. Two of these artifacts, 12H21A6-26 and -29, are half-size bottles.

Most lips and rims of this group are tool-finished. However, two of the finishes (12H21A5-83, -91) lack the quality of the others. They are probably hand-tooled or the result of the absence of a sufficient amount of glass necessary to shape a full and proper lip. The lips of 12H21A5-66, -67, -69, -73 and -81 (Fig. 11) are all downtooled while that of -65 (Fig. 12) is rounded and downtooled, and those of -83 and -91 vaguely so. Fragment 12H21A5-70 is the only lip that is flattened. The rims of 12H21A5-64, -67 and -69 are downtooled while those of 12H21A5-66, -70, -73, -81, -83 and -91 are all flattened or roughly so.

Bottle 12H21A5-69 has the only tapered neck. All the others are more or less bulged. The shoulders are rounded while the bodies are all cylindrical and tapered.

The inside of bases 12H21A5-98, 12H21A6-26 and possibly 12H21A5-72 bear carrying marks. These marks consist of a single small pointed indentation inside the bottle at the push-up and body junction. The indentation is the result of the introduction of a narrow pointed rod-like tool into the bottle to carry it in an inverted position to the annealing oven.

Each base has a rounded heel and a cone-shaped push-up but no mould lines. All resting points are rounded except those of 12H21A5-83 and -91 which are slight rockers. Most bases have ridges that circle the push-ups at various levels. Some are more pronounced than others but the ridge on the base of bottle 12H21A5-83, which also has a rough finish, is the most pronounced of all. It is off-centred and very abrupt. Some chips of glass from a sand pontil also rest on or near the edge of the ridge.

Bases 12H21A5-66, -83, -91, 12H21A6-27 and -29 all have sand pontil marks. The glass chips of -83 are larger than the glass specks that circle the other bases. Bases 12H21A5-67, -72 and 12H21A6-26 have possible sand pontil marks while 12H21A5-65, -69 and -81 apparently bear no pontil marks at all. This, however, does not mean that the latter bottles were not empontilled but rather that there is no physical or definite evidence to prove it. The basal ridges could be mistaken for pontil marks, but their occurrence on bases already with sand pontil marks would tend to preclude this assumption.

Table 4. Dip-Mould Bottles; Table of Measurements*

Cat. No.	1A5 -65	1A5 -66	1A5 -67	1A5 -68	1A5 -70	1A5 -72	1A5 -73	1A5 -81	1A5 -83	1A5 -91	1A5 -98	1A6 -26	1A5 -27	1A6 -29
Bore diam.	21.6	23.0	21.0	19.3	21.0	--	21.5	21.5	22.0	20.5	--	--	--	--
String rim ht.	5.4	3.6	7.6	8.0	3.6	--	6.0	4.0	6.0	2.7	--	--	--	--
Finish ht.	20.2	15.0	21.9	22.5	15.6	--	20.5	18.3	18.8	15.5	--	--	--	--
1st neck diam.	27.2	26.2	27.6	26.1	25.2	--	28.4	26.3	27.0	26.0	--	--	--	--
3rd neck diam.	36.2	36.0	34.3	38.0	34.6	--	39.6	35.2	34.0	36.0	--	--	--	--
Body diam.														
number 1	85.0	85.5	83.6	85.0	--	--	--	85.0	85.0	85.0	--	--	--	--
number 3	81.0	80.9	79.8	78.0	--	82.5	--	80.0	82.0	82.0	80.0	65.0	92.0	67.0
Body ht.	170.0	158.0	170.0	148.0	--	--	--	157.0	160.0	158.0	--	--	--	125.0
Base diam.	81.5	81.4	78.6	76.0	--	81.0	--	80.0	81.0	77.5	77.2	64.0	91.0	66.0
Indent ht.	32.2	39.2	37.5	15.8	--	29.9	--	37.4	39.0	33.3	36.0	30.7	36.0	24.0
Bottle ht.	290.0	280.0	285.0	285.0	--	--	--	290.0	285.0	270.0	--	--	--	--
Volume	26 oz	--	28.5 oz	--	--	--	--	24.5 oz	26 oz	27 oz	--	--	--	--

* Units are millimetres and ounces.

Figure 11. Dip-moulded bottle (12H21A5-81). Figure 12. Dip-moulded bottle. The glass has an orange peel texture (12H21A5-65).

As previously mentioned, the finishing tool appears to have been developed in the 1820s in England and about 30 years later in the United States. This would date the blowing of these bottles, if taken as a group, sometime after 1820 and before 1852, the date at which the privy was no longer in use. The absence of a pontil mark on some of the specimens would suggest that the dip-moulding technique was still being used in the mid-19th century. Those with pontil marks probably pre-date the 1850s.

SOFT DRINK BOTTLES

Only one soft drink bottle was found in either 12H21A5 or 12H21A6. It is a light yellowish-green, egg-shaped bottle, 12H21A5-48 (Fig. 13). Its height is 220 mm, its finish height 15 mm and its volume 10.5 oz. The bottle is made from a two-piece mould and the lip is slightly downtooled and tool finished. The base bears no pontil mark and neither are there embossed words nor designs. The absence of identifying marks make attribution to a specific glass manufacturer or bottle maker impossible.

Figure 13. Egg- or torpedo-shaped soft drink bottle (12H21A5-48).

Munsey mentions that the egg-shaped bottle was imported mostly from Great Britain and used primarily for containing ginger ale (Munsey 1970: 105). However, ovate bottles embossed with the names of Canadian bottlers of the 1870s and 1880s (J. MUSSON/QUEBEC and W. BENNING/QUEBEC, both from Room 7 of the Dauphine at the Parc de l'Artillerie) indicate that similar bottles were either manufactured in Canada or specially ordered for use in this country in at least the second half of the 19th century.

The egg-shaped bottle was introduced in England as early as the first decade of the 19th century (Talbot 1974: 37, 38, 39) and is mentioned in a patent granted to William Hamilton of Dublin in 1809 and later illustrated in another patent dated 1814. It is unclear whether or not this inventor was the first to introduce such a glass container to the open market. In the United States, McKearin (1970: 104) states that the egg-shaped bottle may not have been put into production until the early 1840s. This difference in dating may possibly be explained by the fact that McKearin writes about the American situation and Talbot about English production.

Bottles of ovate shape bearing no pontil mark were dated in England as early as the 1830s (Talbot 1974: 39). The bottle found in the privy could therefore have been manufactured as early as the 1830s but no later than the date of abandonment of the site in the 1850s.

POSSIBLE OIL BOTTLES

Four main artifacts from the privy can be identified as possible oil bottles. They are two base and body fragments (12H21A5-49 and 12H21A6-35) and two neck and finish fragments (12H21A5-92 and 12H21A6-35). Fragments 12H21A5-49 and -92 (Fig. 14) are a light yellowish green while both 12H21A6-35 fragments (Fig. 15) are very light green. It is quite possible considering colour, absence of other base, neck and finish fragments and texture of glass, that the four artifacts form the major parts of only two bottles.

Figure 14. a, Oil bottle neck-finish fragment (12H21A5-49); b, oil bottle body and base fragment (12H21A5-92). Figure 15. a, Oil bottle neck-finish fragment (12H21A6-35); b, oil bottle body and base fragment (12H21A6-35).

Both lips of these two fragmented glass containers are cracked off and formed from added glass. The lip of -35 is uneven while that of -92 is rather flat and smooth. 12H21A6-35 could be said to be downtooled and some vertical stress lines can be seen all around the outside of the added glass. There are no string rims on the two slightly tapered necks. The measurements for these two fragments are shown in Table 5.

Table 5. Neck and Finish Dimensions, Possible Oil Bottles(mm)

	12H21A6-35	12H21A5-92
Bore diam.	17.0	15.0
Lip ht.	6 - 10	9 - 12
Lip diam.	27.5	25.5
Neck diam. A)	22.8	20.5
B)	24.1	21.0

Base and body fragment 12H21A5-49 is cylindrical and tapered. The second and third diameters are 53.0 and 52.5 mm, respectively. Its heel is rounded and presents a slight basal sag on part of its diameter (53 mm in diameter). The push-up is 45.0 mm deep and a rounded cone shape. There are no pontil marks. The glass of body -49 is slightly orange peel in texture.

The glass of cylindrical body 12H21A6-35 is thicker and more orange peel in texture than base and body fragment 12H21A5-49. There are also numerous small air bubbles in the Glass. The heel is rounded and also presents a basal sag. The base diameter is 65.4 mm. Finally, the bell shape push-up is 35.0 mm deep. No identical bottles have been found illustrated in period catalogues or current books dealing with glass but similar types of later models can be found in Putnam (1965: 208, 209).

POSSIBLE SAUCE BOTTLES

Bottle 12H21A5-47 (Fig. 16) is the only possible sauce bottle to have been found in either 12H21A5 or 12H21A6. It is strong yellowish green, two-piece moulded and octagonal. Its height is 180 mm and its volume is 8.25 oz.

The mould line crosses this bottle diagonally and extends 18.5 mm up the 47.0-mm high neck. One mould line follows the front edge of the side panel while the other

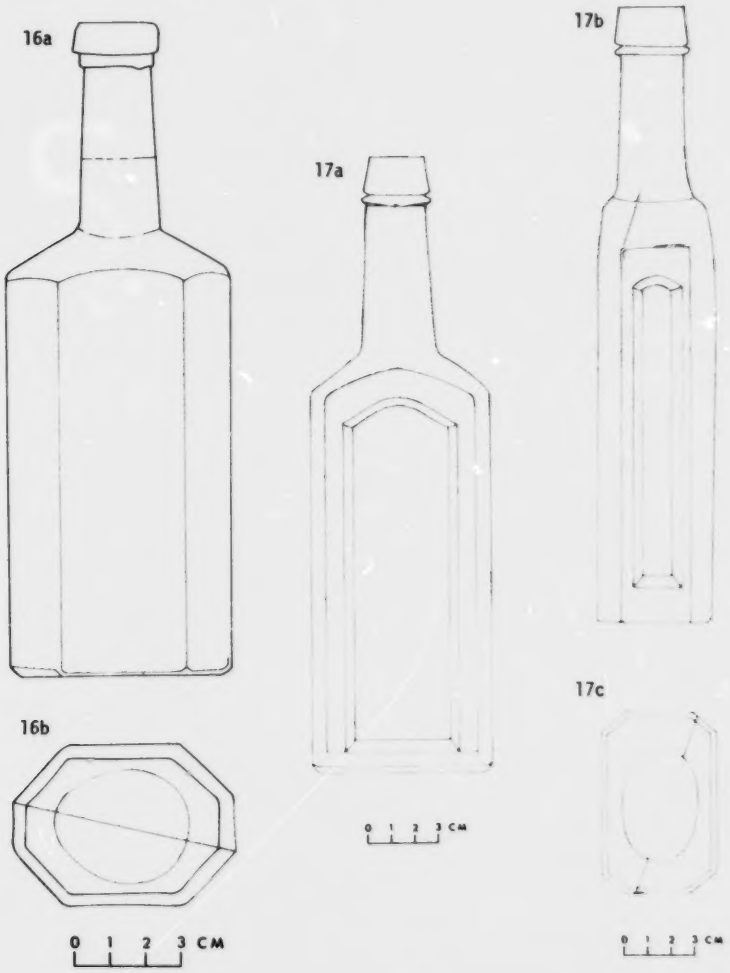

Figure 16. a, Octagonal possible sauce bottle. Oval mark on the base is a pontil mark (12H21A5-47); b, basal view.
Figure 17. a, Tall neck-recessed panel bottle (12H21A5-45); b, side view; c, basal view.

follows the rear edge of the opposite flat side panel. A line encircles the neck at the uppermost part of the mould. Vertical glass striations can be seen on the neck from the finish right through to the slightly rounded shoulder.

The lip of bottle 12H21A5-47 is downtooled at the top and then flattened on the side. It is 17.8 mm high and 22 mm in diameter. The bore diamter is 15.0 mm. The string rim is a very narrow 2.5-mm flat band immediately below the lip. Its diameter is 20.2 mm. The tapered neck has diameters of 19.4, 22.4 and 24.3 mm from the finish to shoulder.

The body, as previously mentioned, has eight sides. The front and back panels are the widest at 34.0 mm while those at right angles to them are the narrowest at 15.5 mm. The four remaining panels are all 21.5 mm wide. The base of the bottle is 42 mm wide from front to back and 60 mm wide from end to end. The body itself is slightly tapered.

The base of the bottle has a very shallow, dome-like indentation (4.0 mm) and a very faint sand pontil mark. Similar bottles of later manufacture have been found in The Chemists' and Druggists' Diary (1896: 453), in a price-list of S. Maw, Son & Sons (1903: 169) and in a 1911 catalogue of the Illinois Glass Company reprinted by Putnam (1965: 212). It is not possible at this time to give a particular date to this bottle, although the pontil mark and two-piece mould indicate that the manufacturing date of this bottle is consistent with the dates of the privy.

MEDICINE-TYPE BOTTLES

Medicine-type bottles vary greatly in shape, size and mode of manufacture. Vials and panelled bottles are the general types of these bottles found in 12H21A5 and 12H21A6.

There are two large similar panels (12H21A5-45 and -46) and one small empontilled one (12H21A6-31). The remaining medicine type bottles or fragments are all cylindrical vials of varying sizes. Three of the artifacts are base and body fragments (12H21A5-39, -41 and -101), one is a finish, neck, shoulder and body fragment (12H21A5-37), two are finish and shoulder fragments (12H21A5-38 and -40), one is a broken but restorable bottle (12H21A5-36) and the other an unbroken one (12H21A5-44). In all, there are 11 medicine bottles.

Group 1. Panelled Bottles

The two-piece mould panelled bottles 12H21A5-45 (Fig. 17) and -46 are nearly identical in size, shape and volume although their colour shades are different; 12H21A5-45 is a very light bluish green, while -46 is a more brilliant version of the same colour.

The lips of both bottles are downtooled and tool-finished while the string rim of -45 is slightly V-tooled and that of -46 downtooled. Both bottles have slightly tapered necks on which can be faintly seen the extension of the diagonal two-piece mould lines.

The measurements for the finishes are shown in Table 6.

Table 6. Finish Dimensions, Panelled Medicine Bottles (mm)

		12H21A5-45 (Fig. 17)	12H21A5-46
Bore diam.		18.0	18.0
Lip ht.		16.2	15.6
Lip diam.		30.0	30.0
String rim ht.		5.3	8.0
String rim diam.		30.0	29.0
Neck diam.	1.	26.0	26.1
	2.	27.5	28.2
	3.	29.5	29.1
Neck ht.		87.4	89.0

The shoulders of both bottles are slightly rounded and bear clearly two diagonal mould lines. The bodies are rectangular with bevelled corners and have three recessed panels; two small side panels are 13.5 mm wide and the larger front panel is 39 mm wide. The top of each panel is arched. Both bases have a moulded oval indentation but neither bears any trace of pontil marks.

The body dimensions are shown in Table 7.

Table 7. Body Dimensions, Panelled Medicine Bottles (mm)

		12H21A5-45 (Fig. 17)	
Body diam.	1.	Front: 77.0	Side: 49.0
	2.	Front: 76.0	Side: 50.0
	3.	Front: 76.0	Side: 48.0
Body ht.		175	
Volume		15.2 oz	
		12H21A5-46	
Body diam.	1.	Front: 77.0	Side: 49.5
	2.	Front: 77.0	Side: 48.8
	3.	Front: 76.7	Side: 48.2
Body ht.		174	
Volume		16 oz	

Many similar panelled bottles with slightly different finishes or proportions can be found illustrated in catalogues and current publications dealing with glass. The long-necked panelled bottles illustrated in Whitall, Tatum and Co. (1876: 29), Illinois Glass Co. (1968: 10, 11, 15), James (1967: 23), Putnam (1965: 56) and Wilson and Wilson (1971: 100) are but a few of the many examples to be found in the available books and catalogues.

Fragment 12H21A6-31 (Fig. 18) is a base and body fragment of a very small, pale green panelled rectangular bottle. It is unusual in having a circular glass ring-shaped pontil mark which results from the use of a blowpipe to empontil the bottle. The only panel is a front or back one 23 mm wide.

Recessed panels started to appear sometime in the mid-19th century. Empontilled examples are infrequent and would date to the period when there was decreasing use of the pontil and increasing use of recessed panels. The two unempontilled bottles could be contemporaneous with or slightly later than the empontilled example.

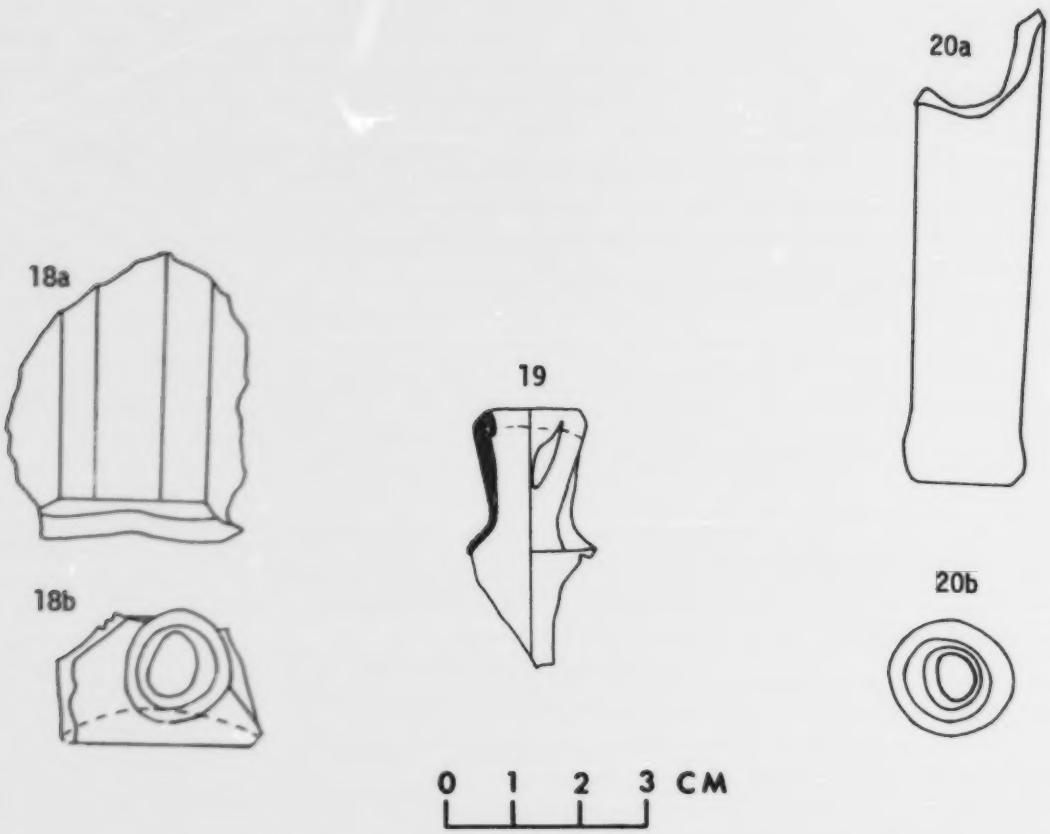

Figure 18. a, Base and body fragment of a small, pale green panelled rectangular bottle (12H21A6-31); b, basal view showing blowpipe pontil mark. Figure 19. Neck and finish fragment of a small vial. Folded-in lip (12H21A5-40). Figure 20. a, Base and body fragment of a small cylindrical vial (12H21A5-101); b, basal view.

Group 2. Vials

The smallest of the vials, 12H21A5-40 (Fig. 19), is probably an embossed bottle of some propriety medicine. Its rough finish consists of a folded lip with a bore diameter of 13 mm. The neck is quite short, only 14 mm high. The end of two mould lines can be seen on the neck. All that can be said about the cylindircal body is that part of an embossed letter is clearly visible a few millimetres below the shoulder. It is impossible to identify the letter. Examples of similar types of bottles are found in Wilson and

Wilson (1971: 33). The finish is compatible with the period of use of the privy.

Cylindrical base and body fragment 12H21A5-101 (Fig. 20) is the lower part of a medicine vial. The body diameters are 18 and 18.8 mm while the base diameter is 19 mm. There is a slight basal sag and an 8-mm diameter glass ring-shaped pontil mark from the use of a blowpipe as pontil. The base also has a slight dome-shaped push-up 2.3 mm deep. There is no embossing on the body of the vial. Wilson and Wilson (1971: 27) illustrate a good example of a similar type of glass container.

Shoulder and finish fragments 12H21A5-37 and -38 have basically similar finishes. Both have a flanged lip, no string rim, a short roughly cylindrical neck and a slightly sloping shoulder. Fragment 12H21A5-37 is a very light bluish green while 12H21A5-38 is a very pale shade of green.

Both cylindrical bodies appear to be dip-moulded. The dimensions for these two fragments are shown in Table 8.

Table 8. Available Dimensions, Vials 12H21A5-37 and 12H21A5-38 (mm)

	12H21A5-37	12H21A5-38
Bore diam.	13	15.0
Lip ht.	2.4	2.8
Lip diam.	23.2	26.0
Average neck diam.	17.0	17.0
Neck ht.	15.4	16.3
Only available body diam.	44.0	47.6

Base and body fragments 12H21A5-39 and -41 are possibly the lower parts of the two necks described above. Fragment 12H21A5-41 is the same colour and approximate diameter as -38. Both bases have rounded heels, slight dome-shaped push-ups and glass ring-shaped pontil marks from the use of a blowpipe as pontil. The base dimensions are shown in Table 9.

Table 9. Available Dimensions, Vials 12H21A5-39 and 12H21A5-41 (mm)

	12H21A5-39	12H21A5-41
Lowest body diam.	44.5	41.0
Base diam.	42.0	40.5
Indent ht.	6.2	6.2
Pontil mark diam.	14.0	9.6

The largest of the vials, 12H21A5-36 (Fig. 21), is brilliant bluish green. It has a flanged lip, a cylindrical neck and a very slightly sloped shoulder. The bore diameter is 15.5 mm, the lip 2.6 mm high and 26.2 mm wide. The neck is short, 21 mm high and 19 mm wide.

The body is dip-moulded and a constant 50.3 mm in diameter. It is 140 mm high. The base is almost flat but bears a sand or glass-tipped pontil mark 11 mm in diameter.

Similar but later vials are found in a price list for S. Maw, Son and Sons (1903: 169) and in The Chemists and Druggists' Diary (1896: 453), as well as in other period catalogues. The finish and body forms found on these bottles were in use for a long period, including the time when the privy was used.

Complete and unbroken vial 12h21A5-44 (Fig. 22) is the only remaining artifact in this group. It differs considerably from the others. Its hand-tooled lip is slightly downtooled and made of added glass. The bore diameter is 14.8 mm while the diameter of the lip is only 20 mm. It is 9.2 mm high. The neck, however, is long

Figure 21. Cylindrical vial with flanged finish (12H21A5-36).

(47.8 mm high) and tapered. The neck diameters are 16.6, 18.5 and 20.2 mm from finish to slightly rounded shoulder.

The body is cylindrical and probably dip-moulded. It is 74 mm high and 46 mm in diameter and has a volume of 3.5 oz. Heel and resting point are rounded while the push-up is a rounded cone shape and is 13 mm deep. A 13-mm wide glass ring-shaped pontil mark is also present at the top of the push-up. Little else can be said about it except that there are no precise parallels in any of the available catalogues.

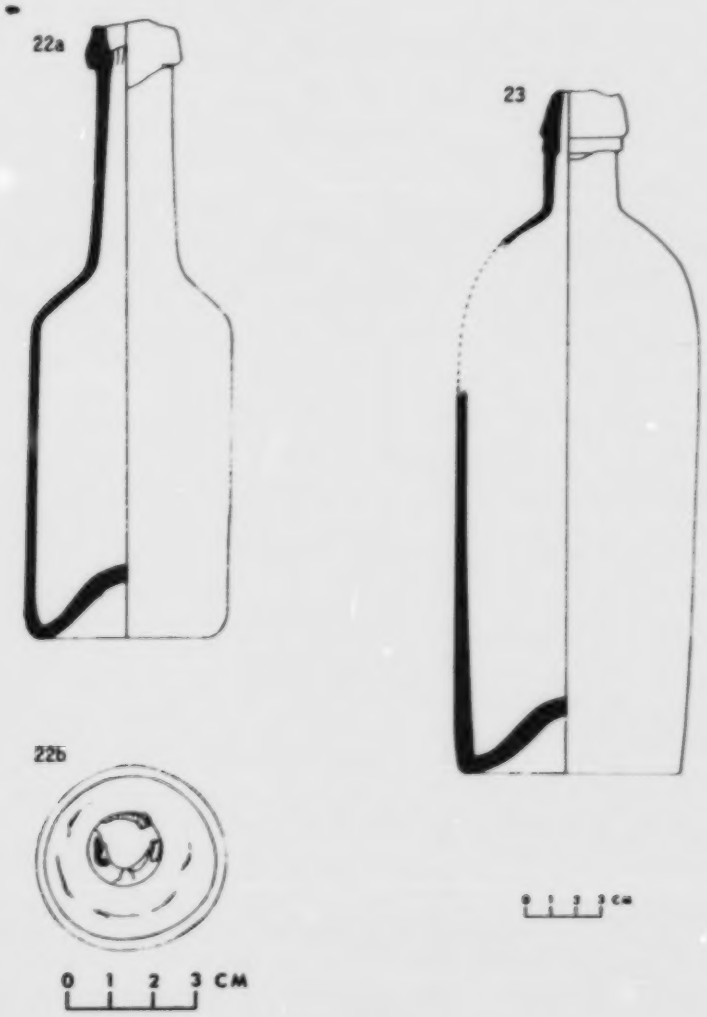

Figure 22. a, Hand-finished cylindrical vial with basal push-up (12H21A5-44); b, basal view with push-up and glass ring-shaped pontil mark. Figure 23. Large, unidentified yellowish green bottle, probably dip-moulded (12H21A5-82).

MISCELLANEOUS BOTTLES AND FRAGMENTS

Four artifacts are grouped under this heading: one large bottle (12H21A5-82) and two clear glass finish and neck fragments (12H21A5-43 and 12H21A6-34).

Fragment 12H21A6-34 has a folded-out lip 5 mm high and no string rim. From the fragment of lip available, it would appear that its opening is at least 30 mm wide and possibly indicates that the vessel contained food.

Fragment 12H21A5-43 is lead glass. Its lip is slightly flanged, tool-finished and 3 mm high while its neck is 14 mm long. The bore diameter is much smaller than that of 12H21A6-34.

Bottle 12H21A5-82 (Fig. 23) is a large yellowish green cylindrical bottle 226.7 mm high. It weighs 738.2 mm and has a capacity of 40 oz.

The tool finish of this bottle is made from added glass and is rather uneven. Its lip is downtooled while its string rim is roughly flat. The lip is 19 mm high and 32 mm in diameter, while the bore diameter reaches 22 mm. The string rim is 17 mm high and 30 mm in diameter.

The tapered neck is short, 22 mm in length, and its diameters from finish to rounded shoulder are 27.5, 28.2, and 29.5 mm.

Probably dip-moulded, the 170-mm high body is only slightly smaller near the base. Its dimensions are 94, 94 and 93.5 mm. The basal surface reveals a 21.6 mm deep bell-shaped push-up but no pontil or particular push-up marks. The heel is abrupt and the resting point is flat. It is impossible to say which liquid this bottle contained or exactly at what date it was produced. The absence of a pontil mark would suggest, however, this bottle was manufactured after the introduction of the snap case in the late 1840s or early 1850s.

CONCLUSIONS

The study of the bottle glass found in the privy of the commandant's quarters at Fort George Military Reserve offered an excellent illustration of the changes taking place in glass technology from the early 1830s to about 1853. It also provided some fine examples of oil, sauce, medicine and soft drink bottles and a good cross section of dark green beverage containers available at that time. These presented a variety of shapes and modes of manufacture some of which were only then being introduced or abandoned.

The two case bottles were both dip-moulded and while one bore a sand pontil mark and was finished by a finishing tool, the other was hand-tooled and without a pontil mark.

The so-called wine bottles were grouped under four main headings: tall and elongated, Ricketts' and Ricketts' type, three-piece mould, and dip-mould bottles. The tall and elongated group included 13 bottles or significant fragments whose nine bases bore either blowpipe (two examples) or sand pontil marks (one example), or no pontil marks at all (six examples). Of the eight finishes, seven had cracked-off lips and hand tooled string-rims while the eighth was formed by a finishing tool. Twelve of the bottles had been dip-moulded and the remaining one probably turn-moulded (Table 10). The variety of manufacturing techniques made it impossible to date these bottles as a group; all the bottles did, however, fit into the period of use of the privy.

In the second group one bottle was definitely identified as a Ricketts' mould bottle while the other lacked the proper embossing. The positively identified bottle bore a sand pontil mark while the other did not. Both finishes were shaped with a finishing tool. The Ricketts' mould, as previously mentioned, was patented in Britain in 1821 and was probably used to produce bottles shortly thereafter.

The bottles of the three-piece mould group lacked the overall quality of the Ricketts' mould bottles. More than half the bases bore sand pontil marks while the others had none. Some lips were shaped with a finishing tool while others were probably hand-tooled. At least two of the four pontil marks occurred on bottles having finishing tool lips.

Dip-mould bottles made up the last group of liquor bottles. All but two of the lips and rims of this group were definitely shaped with a finishing tool. Most of the bases of this group also bore sand pontil marks while only three of the 12 bases clearly bore no pontil marks at all. The use of the finishing tool and of the snap case on some of these bottles placed the phasing out of the dip mould to at least the 1850s, or somewhat later than generally believed for the cylindrical black glass bottles.

Table 10. Table of Techniques

Groups and provenience	Ring-shaped pontil mark	Sand pontil mark	No pontil mark	Free-blown	Dip mould	Two-piece mould	Three-piece mould	Turn mould	Finishing tool	Hand tool
Egg-shaped										
12H21A5-48			X			X			X	
Case bottles										
12H21A5-50			X		X					X
-80		X			X				X	
Tall and elongated										
12H21A5-52		X						X	X	
-53			X		X					X
-54			X		X					X
-55			X		X					X
-56			X		X				-	-
-57	-*	-	-		X					X
-58	-	-	-		X					X
-59	-	-	-		X					X
-60	-	-	-		X					X
-61			X		X				-	-
-62	X				X				-	-
-63			X		X				-	-
-99	X				X				-	-
Ricketts'-type										
12H21A5-51		X					X		X	
-79			X				X		X	
Three-piece mould										
12H21A5-78		X					X		X	
-95	-	-	-				X		X	
-94		X					X		?	?
-68			X				X		X	
-71		X					X		X	
-77			X				X		-	-
-96			X				X		-	-
12H21A6-38		X					X		-	-
Dip mould										
12H21A5-65			X		X				X	
-66		X			X				X	
-67		X			X				X	
-81			X		X				X	
-83		X			X					X
-91		X			X				?	?
-73	-	-	-		X				X	
-70	-	-	-		X				X	
-72		X			X				-	-
-98		X			X				-	-
-69			X		X				X	
12H21A6-26		X			X				-	-
12H21A6-27		X			X				-	-
12H21A6-29		X			X				-	-
Possible oils										
12H21A5-49			X	X					-	-
12H21A5-92	-	-	-	X						X
12H21A6-35			X	X						X
Possible sauce										
12H21A5-47		X				X			X	
Medicine type:										
Panels										
12H21A5-45			X			X			X	
12H21A5-46			X			X			X	
12H21A6-31	X					?			-	-
Vials										
12H21A5-40	-	-	-			X				X
12H21A5-101	X			?	?				-	-
-37	-	-	-		X					X
-38					X					X
-36	-	X	-		X					X
-39	X				X				-	-
-41	X				X				-	-
-44	X				X					X
Miscellaneous										
12H21A5-82			X		X				X	

* Part missing.

The last beverage bottle studied was the only egg-shaped mineral or soda water bottle excavated from the privy. Despite the mention of such a bottle type in William Hamilton's patents of 1809 and 1814, some doubt remains regarding its actual date of production as similar bottles bearing no pontil marks were being manufactured as early as the 1830s and throughout most of the remainder of the 19th century.

The other types of bottles found in 12H21A5 and 6 were possible oil, sauce and medicine bottles.

The group of possible oil bottles numbered four main artifacts probably belonging to only two glass containers. Both lip fragments were hand-tooled while both bodies were dip-moulded and the bases bore no pontil marks. The hand tooling and the absence of pontil marks on dip-moulded bottles reinforced the fact that they were blown during a period of transition when new and old manufacturing techniques often overlapped or were used concurrently.

A similar comment applies to the only sauce bottle that was found in 12H21A5 and -6. This two-piece mould bottle, whose mould line crossed the base, bore traces of a sand pontil while its lip and string rim were tool-finished. The presence of these characteristics placed its manufacture well into a transition period.

Two types of medicine bottles were found in the privy: cylindrical vials and panelled rectangular bottles.

Panelled bottles were nearly identical. They had tooled finishes, were two-piece moulded and were without pontil marks. The only other panelled bottle was much smaller and bore as its main characteristic a ring-shaped glass pontil mark caused by the use of a blowpipe. The absence of neck, finish and most of the body made dating of the smaller panelled bottle rather uncertain. The other two panelled bottles, however, presented relatively new characteristics for that time and thus probably dated close to the end of the period of use of the privy.

The presence of two-piece mould lines and of a folded finish rendered the date of manufacture of the smallest of the vials (12H21A5-40) compatible with the time period of the privy. Four of the remaining five vial bases bore glass rings from the use of a blowpipe as a pontil while one was sand empontilled. Three of the remaining vials had flanged lips while the last one (from bottle 12H21A5-44) had a hand-tooled lip made from added glass.

As in the case of the beverage containers, one can conclude that oil, sauce and medicine bottles were all discarded in the privy between 1835 and about 1853.

Therefore, without being able to date each individual bottle, it is possible to state that none of them presented characteristics that disproved purity of content. On the contrary, the variety of mould types, finishes and basal surfaces tended to place the bottles from the privy in a

period of transition in bottle glass technology and manufacturing. This can be clearly seen in Table 10 which illustrates the use or absence of the various manufacturing techniques within each bottle type or on any one of the vessels.

The table of techniques (Table 10) indicates that the blowpipe was used as a pontil on seven (or 15.6%) of the 45 bases. Two of these seven bases were from tall and elongated liquor bottles and the remainder from medicine vials. The sand pontil, however, was utilized on 18 (or 40%) of the bases coming from all but the egg-shaped, miscellaneous and possible oil types of bottles. Finally, no pontil marks were found on 20 (or 44%) of the bases. All the possible sauce bottles and the medicine vials had bases with pontil marks. It was probably impractical at that time for the small vials to be held in a fashion other than with the pontil.

In any event, this evidence suggests that the use of the ring-shaped pontil was confined to specific types of bottles only.

The dip mould was the most widely used mould form, accounting for 35 (or 64.5%) of the 54 bottle bodies. It made up the dip mould liquor bottle type and was found in case and tall and elongated type bottles as well as in the medicine vials and in the miscellaneous bottles. The three-piece mould was used in the making of ten (or 18.5%) of the bottles that were all grouped in the three-piece mould and Ricketts' bottle types.

The two-piece mould was used only on five (or 9.3%) of the bottles. Even though this mould type is not numerically important, it is significant, for it is associated in this case with two then relatively new bottle shapes: the egg-shaped beverage bottle and the large recessed panel rectangular bottle.

There were also three (5.6%) free-blown possible oil bottles and one (1.9%) turn-moulded tall and elongated bottle.

Finally, 20 lips and rims (55.6%) were shaped with a finishing tool while 16 (44.4%) were most probably hand-tooled. As indicated in Table 10, seven hand finishes were found on tall and elongated bottles, five on medicine vials, two on possible oil bottles and one each on dip mould and case bottles. Seven tool finishes were found on dip mould bottles, four on three-piece mould bottles, two each on Ricketts'-type bottles and medicine panelled bottles, and one each on egg-shaped, case, tall and elongated, possible sauce and miscellaneous bottles.

This suggests the hand finishing of bottles was still widespread but mainly associated with dip-moulded and free-blown bottles. Furthermore, because of the style of finishes used, certain types of bottles (vials for instance) may have continued to be hand-finished for a longer period

than other types of bottles. The finishing tool, however, was found to have been associated with all four types of moulds.

Some doubt remains about the frequency of cleaning of the privy, which was often done to prolong the period of use of such a structure. From the bottle glass at hand no conclusion can be drawn on this matter. Earlier blown bottles found in the privy could have been re-used over a period of years before being discarded in the privy, or could have been thrown away as much as 20 years before its abandonment. Some other type of evidence will have to provide an answer to this question.

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GLASSWARE EXCAVATED FROM FORT ANNE, NOVA SCOTIA

Jane E. Harris

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ABSTRACT

The archaeological work at Fort Anne, Annapolis Royal, Nova Scotia, from 1962 to 1969 returned approximately 300 identifiable fragments of glassware. These fragments were mainly liquor bottles, but also included food storage bottles, medicine bottles and tableware dating from the late 17th to the early 20th century. The glassware was analysed by type, and dates of use or manufacture were assigned on the basis of form, use or manufacturing technique. The oldest vessels found were several fragmentary free-blown wine bottles and a few wine glasses, both of late 17th- or early 18th-century British manufacture. There appeared to be no glass artifacts from the construction period of the fort, post 1635, up to the late 17th century. French glass was sparse, limited to only a few fragments of 18th-century wine bottles and blue-green utilitarian bottles. Almost one-quarter of the glass described related to the 19th and very early 20th centuries.

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INTRODUCTION

Historical Background

Fort Anne is situated on a point of land between Allen's Creek and the Annapolis River in the town of Annapolis Royal, Nova Scotia. The French constructed the fort about 1640 and while in French hands it was known as Port Royal. This fort was the second by that name in the area, the first having been constructed about seven miles downriver approximately 30 years earlier. Port Royal and the small settlement that grew up around it never really prospered, appearing to have been largely ignored by the French government. The infrequency and irregularity of French supply ships to the fort encouraged trade with the New England colonies and, after 1708, privateering of the New Englanders' ships. After 1654 and a successful attack by New England on the colony, the fort was under nominal British control until 1667 when France regained control of Acadia by the Treaty of Breda; however, she did not retake possession until 1670. During the period of British control French and Acadian settlers around the fort were allowed to stay and no English settlement took place. The French planned extensive renovations for the fort in 1689 but these were delayed in 1690 by a British attack. When again under way, the renovations resulted in the construction of the No. 1 powder magazine in the west bastion in 1703 and the No. 2 magazine in the south bastion in 1708. In the meantime, the New Englanders had unsuccessfully attempted to recapture the fort, but they returned in 1710, this time with artillery, and the French subsequently surrendered.

The fort, now known as Fort Anne, did not really change after it fell into British hands, even though it was the provincial capital until 1749. Sporadic attempts at renovation or reconstruction were usually called to a halt before completion, and in 1767 the fort was partially dismantled only to be built up again in the 1790s when further hostilities broke out between England and France. It was during this period, in 1797, that the still-standing officers' quarters were constructed. Final abandonment came in 1854, after which the fort was leased to civilians from the area (Sutherland 1973; MacVicar 1897; Morton 1963).

Research Techniques

Archaeological activity under the direction of the National Historic Parks and Sites Branch, Parks Canada,

began at the fort in 1962 and continued sporadically until 1969. Most of this work was concentrated in and around the No. 2 powder magazine in the south bastion, while some excavation was carried on opposite the officers' quarters. The glassware recovered was divided into functional groups and then arranged as chronologically as possible within these groups to illustrate the types of glassware used throughout and subsequent to the operational years of the fort. All glassware found, with the exception of modern machine-made glassware, has been included in the analysis.

Fort Anne is one of the oldest historic sites in Canada and it was hoped that analysis of the glass would reveal 17th- and early 18th-century wares. This hope has been only partially realized as none of the glass found could be definitely related to the 17th century.

Glass colours were determined under fluorescent lighting using a Nickerson Color Fan (Munsell Color Company). The presence of lead in the glassware was determined by examination under a short wave ultraviolet light source, Fisher Scientific UVS-11.

BLACK GLASS LIQUOR BOTTLES OF THE 18TH AND EARLY 19TH CENTURIES

Dark olive green glass, which appears black in reflected light, is termed "black glass." It became favoured for bottles in the 17th century in England and the preference lasted until the middle of the 19th century (Scoville 1968: 41). "Black glass liquor bottles" used as a descriptive collective term includes those bottles that were common serving vessels and storage containers for beverages such as beer, rum, wine, gin, brandy, cider, mineral waters, etc. By the early 1800s certain types of bottle shapes were beginning to be used for specific beverages (Barrelet 1953: 129); modern examples are Mateus bottles, champagne bottles and Benedictine bottles whose contents are known by their distinctive shapes. Black glass liquor bottles from Fort Anne include early 18th-century free-blown bottles as well as early 19th-century mould-blown bottles.

Case Bottles

Square-sectioned bottles blown in dip moulds were being manufactured as early as the first half of the 17th century in England and apparently preceded round-sectioned bottles as containers for liquor (Noël Hume 1969: 33). Their popularity decreased in the last half of the 17th century with the development of stronger circular bottles, but increased again greatly during the 18th century when they became well-known for their major function as gin containers. The 6 to 12 examples from Fort Anne were fragmentary and were represented by 28 flat olive green (5GY-7.5Y) body fragments, many with rounded 90-degree corners. It is impossible to say whether these fragments belonged to bottles manufactured in the 17th, 18th or 19th centuries. There were, however, three flat fragments that could be distinguished from the others by the deliberate vertical ridges present on the body. Case bottles with this feature were usually associated with the late 19th and early 20th centuries.

Free-Blown Globular Bottles

Globular bottles were mouth-blown without the construction of a mould and shaped by hand; thus the

important features are those pertaining to shape and not dimensions, although dimensions seem to have been quite consistent. This bottle type is characterized by a short, globular body, wide push-up and a short, tapered neck, simply finished. To date, Fort Anne has the best representation of free-blown bottles of this type in the Parks Canada collection even though no complete bottles were found.

Figure 1 is a reconstruction of the type based on a neck and body from two different bottles. The push-up was formed before empontiling by means, in many cases, of a quatrefoil-tipped rod. The base was then empontiled, in most cases with a sand pontil; then the neck was finished, first by cracking off the lip and then by winding a thread of glass around the neck to form the string rim.

Most of the fragments found were patinated and bubbled and varied in colour from 2.5GY to 2.5Y, 35 of the 74 fragments being 7.5Y. More than 20 and possibly even 40 bottles were represented, making this one of the largest single groups of bottles found at the site. Many of the base fragments were worn on the bearing surface, indicating repeated use. Tables 1 and 2 contain globular bottle dimensions.

Table 1. Neck Dimensions (in mm)

Bottle	Lip ht.	Lip diam.	String rim ht.	String rim diam.	Finish ht.	Neck ht.	Neck diam.
5B1B7-13	1	24	8	32	10	55	25,37,55
5B1H11	2	25	7	33	9	59	24,29,45
5B1H18	2	29	4	33	7	--	24,31,--
5B1B7-16	3	27	4	35	8	63	27,37,57
5B1B7-1	3	27	4	35	9	--	27,--,--
5B1M5	4	25	7	34	11	--	26,--,--
5B1B5-17	4	30	7	36	9	65	29,35,55

Table 2. Base Dimensions (in mm)

Bottle	Base diam.	Pontil diam.	Push-up mark diam.	Push-up ht.
5B1H18-1	155	60	50	22
5B1E13	157	62	38	35
5B1F12	150	62	--	33
5B1B7-11	150	54	--	31

Noël Hume (1962: 102-3) describes this type of bottle as the "squat form" manufactured in England from about 1685 to 1730, but not really popular until about 1700. They were used as serving and storage containers for a variety of beverages. French bottles were similar in shape at this time, and it is difficult to differentiate the two (Barrelet 1953: 102). Bottle shapes in both countries had changed considerably by the beginning of the second quarter of the 18th century into French "flower-pot" bottles and English "mallet-shaped" bottles. But it is most likely that the bottles from Fort Anne were of English manufacture since the British had captured Port Royal in 1710 and continued to occupy it after this date. French trade with New England occurred throughout the 1600s so these bottles, although belonging to the French, could still have been manufactured in England.

French Liquor Bottles

French liquor bottles, after the first quarter of the 18th century until the 19th century, were partially formed in a tapered dip mould that gave the body a flower-pot shape (Barrelet 1953: 102). Other distinctive features of the type were a plain finish consisting of a fairly high cracked-off lip and slightly tooled string rim, an elongated neck and a parabolically shaped push-up usually empontiled by a glass-tipped pontil.

The representation from Fort Anne consisted of only one or two bottles. One whole neck and part of a base were recovered (Fig. 2a, b). Five other neck and body fragments were found, all heavily patinated; they varied in colour from 10Y to 7.5Y.

Cylindrical Liquor Bottles

In the first half of the 18th century bottles were binned upside down or on their sides in racks. The practice of storing on their sides caused a change in bottle shape from globular to cylindrical bodies for more convenient storage (Leeds 1914: 290; McKearin 1971: 125, 127). The earliest were short and squat with tapered necks and plain finishes. By the end of the century the bottles had become tall and slim with more cylindrical necks and more elaborate finishes. Until the early 1800s they were manufactured in dip moulds, their neck, finish and push-up fashioned by hand, but by the early 1820s "three-piece" moulds were beginning to be used in which the shoulder, neck and even

the base could all be shaped (Ricketts patent of 1821). About the same time (1830s) the finishing tool was developed to create much more uniform finishes and the whole bottle had a much neater and more symmetrical appearance (Toulouse, personal communication).

Although this section covers a rather long period, it still deals strictly with all-purpose black glass beverage or liquor bottles. Thirty to 50 bottles were represented among which informative neck fragments far outnumbered those of the base. The necks were divided into finish types in an evolving chronological order based on style and manufacturing techniques. These types were then dated with reference to the corresponding base types when possible. More than one fragment in an excavation unit was indicated in brackets after the provenience of the unit.

Type 1 (5B1G16, 5B1H6)

Finish type 1 was the least complicated. It consisted of a cracked-off lip with a downtooled string rim having a V-shaped profile similar to that in Figure 1. The neck profile was tapered but straighter than that in the illustration. Finishes of this type appeared as early as about 1725 but could still be seen on bottles as late as about 1770 (Noël Hume 1961: 100). Dating could not be more specific as only small portions of the necks were present.

Type 2 (5B4K2)

Finish type 2 was really an anomaly as far as an evolved order is concerned and it may not even be from a liquor bottle. The finish consisted of a cracked-off lip and a downtooled string rim applied close to the top of the lip. The neck was tapered and appeared to join a wide shoulder. Although this finish did not correspond to any of Noël Hume's types, its neck shape and apparent shoulder shape would place it toward the end of the first half of the 18th century.

Type 3 (5B1H6, 5B1H18, 5B2J7, 5B2K1)

The third finish type was an elaboration of type 1. The lip had been cracked-off and then everted so it had an almost V-shaped profile. The string rim was downtooled with less of a V shape than found in types 1 and 2, and the neck had become more cylindrical and less tapered. A base was found that could be assigned to this finish type. It was typically broad and dome-shaped. The base was pushed up by hand before the application of the pontil, in this case a

sand pontil. A neck and the base representative of this type are illustrated in Figure 3. They correspond to Noël Hume's type 19 (1961: 104), typical of the 1760s with a date range of 1750-70.

Type 4 (5B2J7)

This finish (Fig. 4a) was another anomaly. It had a slightly everted and downtooled lip with an uptooled string rim. This is not an uncommon finish and a type often found, but in small numbers, on sites inhabited during the late 18th century. Noël Hume (1962: 214) feels this type does not occur before about 1770 and continued to at least the early 1800s.

Type 5 (5B1G2, 5B1H6, 5B2K2)

Type 5 finishes varied from type 3 in that the lip had been additionally downtooled to provide a definitely V-shaped profile; the string rim had been heavily downtooled so that it was almost a flat band, and the neck had become increasingly cylindrical (Fig. 4b). Finish type 5 would probably date toward the end of the third quarter of the 18th century.

Type 6 (5B2B3 [2], 5B2D4 [4], 5B4L2)

While quite similar in early examples to type 5, type 6 finishes differed in that the lip had been thickened by adding glass to the cracked-off lip resulting in a heavier lip (Fig. 4c). This type of finish is usually associated with relatively tall slim bottles of the "evolved cylindrical form" (Noël Hume 1961: 105) popular from about 1770 to 1800. Two bases were found that could be associated with finish type 6. The first (Fig. 4d) was narrow and almost conical, pushed up with a flat-tipped metal rod and then held for finishing by a sand pontil. The second base, also narrower than previous bases, had been pushed up with a quatrefoil-tipped rod and empontiled in the same manner as the first base, leaving the push-up with a truncated cone or bell shape.

Type 7 (5B1C1, 5B1G1, 5B1G2, 5B2A3, 5B2A8, 5B4L2 [2])

This finish type was characterized by a lip higher than that of type 6 and a slightly rounded profile. Other features of the neck were a short downtooled string rim and a slightly bulged neck. Although the weld between lip and string rim was smooth, these finishes were not formed with a

lipping tool. With a dip-moulded body, type 7 finishes can be dated from about 1790 to 1820 or 1830 (Noël Hume 1961: 105; McKearin 1970: 82, fig. 3).

Type 8 (5B1C1, 5B1G2, 5B1H4 [2], 5B2D2 [2], 5B2G1, 5B2K1, 5B4E2 [2], 5B4L2 [5])

Type 8 finishes (Fig. 5) were distinguished by their method of manufacture: all were formed by a lipping or finishing tool and in this case all were composed of a tall downtooled lip with a shorter downtooled string rim. Bottles finished in this manner can be readily identified by their neat symmetrical finish and smooth cylindrical bore. Mould lines immediately below the finish are usually erased by the tool. The lipping tool probably was in moderate use as early as the 1830s (Toulouse, personal communication).

Black glass bottles from Fort Anne with type 8 finishes were either manufactured in dip moulds, as were the bodies of the previous finish types, or in later three-piece moulds (Fig. 7) in which a mould line would separate the body from the shoulder and two more mould lines would bisect the shoulder and possibly the neck vertically. If dip-moulded, the bottles could date as late as the 1840s or 1850s. Three-piece moulded bodies were being manufactured in Bristol, England, in the 1820s by the Ricketts Glassworks, but probably not in North America before the early 1840s (McKearin 1970: 106-7). No bases from dip-moulded bodies could be positively identified as belonging to type 8 finishes but a number of three-piece body bases were obvious. Among the three-piece bases, three basal variations were observed, two of which are quite common.

The most common basal variation among the three-piece moulded fragments and found on four of the Fort Anne bottles is illustrated in Figures 6a and 7. Its heavy conical push-up was most often associated with a slugged bottom. Empontiling could be varied but usually consisted of the use of a small push-up tool followed by a sand pontil. The second most common variation (Fig. 6b) occurred on only one bottle but is the base form found on original Ricketts bottles and subsequently is called here a "Ricketts'-type base." It consisted of a shallow dome-shaped push-up with a slightly rounded band at its lower extremity, the outer edge of which formed the bearing surface. Often embossed on this area was Ricketts' name and later other company names; however, the Fort Anne example was plain. Just inside this area the outer edge of a sand pontil mark was usually evident and one was found on this fragment. A much less common variation was illustrated on another bottle base. It had all the characteristics of the first basal variation but just inside the bearing surface were embossed faint indiscernible letters or figures occupying an area approximately 15 mm high.

Figure 1. Reconstruction of a free-blown globular bottle (5B1B5-17, 5B1H18-1). Dimensions are in millimetres:

Lip ht.	2-5	Neck ht.	+65
Lip diam.	30	Mid-neck diam.	37
String rim ht.	5-8	Push-up ht.	21
String rim diam.	35-38	Pontil mark diam.	60

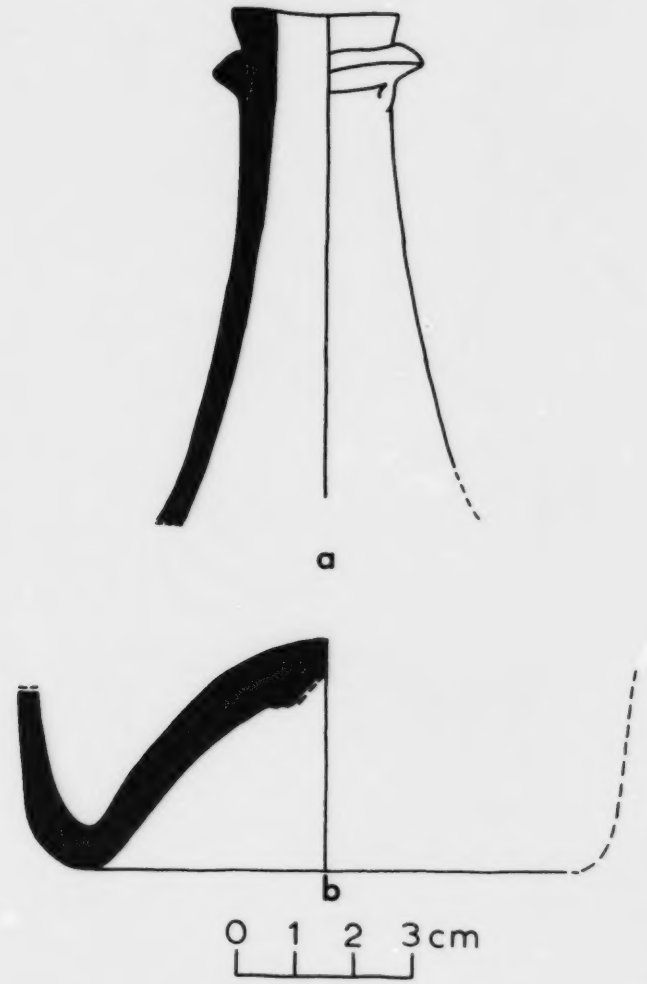


Figure 2. French liquor bottle fragments. Dimensions are in millimetres:

a) Bottle neck (5B2J6-5)	
Lip ht.	7
Lip diam.	28
String rim ht.	6
String rim diam.	33
Finish ht.	12
Neck diam. under finish	26
Mid-neck diam.	33
Neck ht.	85
b) Base frag. (5B1H10-6)	
Base diam.	±120
Push-up ht.	+30
Pontil mark diam.	±20

Figure 3. Cylindrical liquor bottle neck and base. Dimensions are in millimetres:

a) Bottle neck (5B2J7-10)

Lip ht.	2-5
Lip diam.	30
String rim ht.	7
String rim diam.	38
Finish ht.	12
Neck diam. under finish	27
Mid-neck diam.	34
Neck ht.	87
Body diam.	±100

b) Bottle base (5B1H18-2)

Body diam.	113
Base diam.	115
Push-up ht.	36
Pontil mark diam.	62

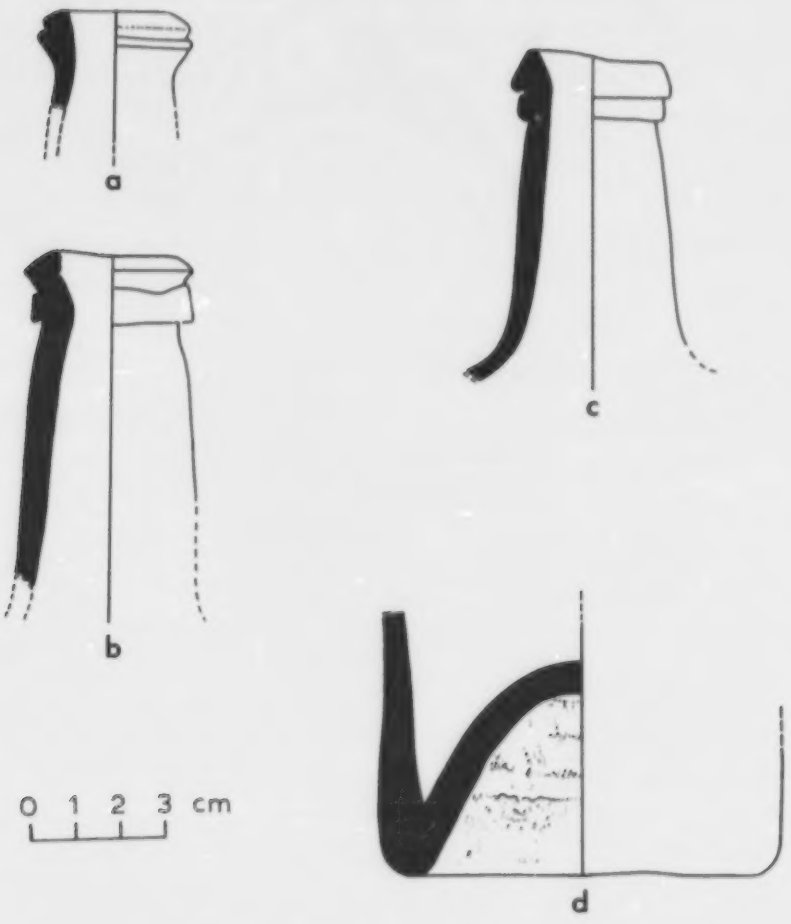


Figure 4. Cylindrical liquor bottle necks and base. Dimensions are in millimetres:

a) Neck fragment (5B2J7-9)

Lip ht.	4-5
Lip diam.	33
String rim ht.	9
String rim diam.	34
Finish ht.	14
Neck diam. under finish	27

b) Neck fragment (5B1G2-2)

Lip ht.	8
Lip diam.	31-36
String rim ht.	5
String rim diam.	33
Finish ht.	14
Neck diam. under finish	28
Mid-neck diam.	33
Neck ht.	65

c) Neck fragment (5B4L2-16)

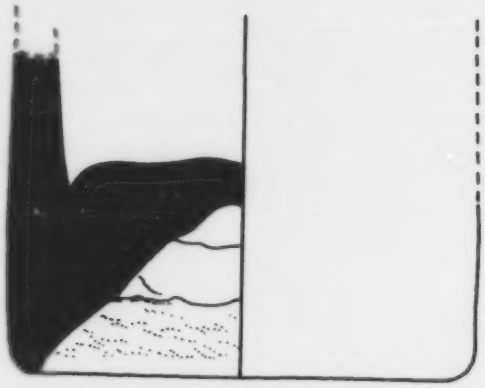
Lip ht.	8
Lip diam.	38
String rim ht.	7
String rim diam.	37
Finish ht.	15
Neck diam. under finish	30
Mid-neck diam.	39
Neck ht.	82

d) Bottle base (5B2B3-19)

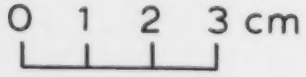
Body diam.	90
Base diam.	89
Push-up ht.	42

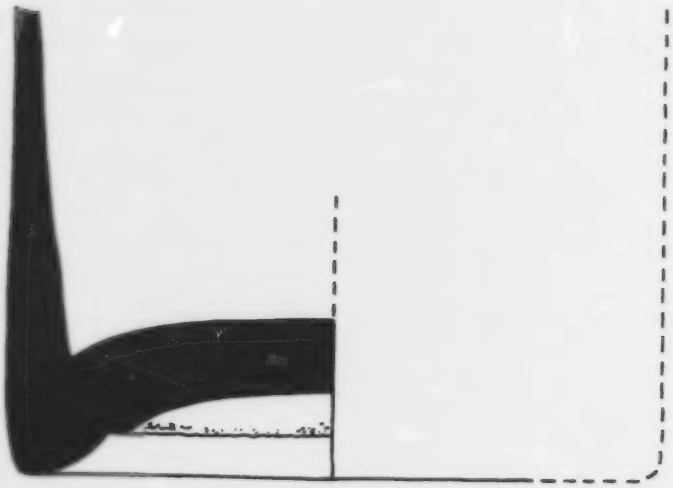
Figure 5. Cylindrical liquor bottle neck finished with a lipping tool (5B4L2-14). Dimensions are in millimetres:

Lip ht.	17
Lip diam.	28-33
String rim ht.	6
String rim diam.	31
Finish ht.	23
Neck diam. under finish	27
Mid-neck diam.	36
Diam. at neck bulge	38
Neck ht.	96



a





b

Figure 6. Cylindrical liquor bottle bases (5B1H4-11, 5B2K1-8). Dimensions are in millimetres:

a) (5B1H4-11)

Body diam.	72
Base diam.	72
Push-up ht.	26

b) (5B2K1-8)

Base diam.	100
Push-up ht.	15
Pontil mark diam.	65

Figure 7. Cylindrical liquor bottle manufactured in a three-piece mould (5B4L2-13). Dimensions are in millimetres:

Neck diam. at base	45
Extant neck ht.	60
Body diam. at shoulder	97
Body ht.	102
Base diam.	92
Push-up ht.	34
Extant bottle ht.	203
Volume	23 oz.

LIQUOR BOTTLES OF THE 19TH AND EARLY 20TH CENTURIES

Figured Flasks

The term "figured flask" is used here to include any bottles having an ovoid horizontal cross section and an embossed design on the body. In most cases flasks of this type were used for liquor but other uses, primary or secondary, cannot be precluded.

Specimen 1 (5B2G2-21)

Three very small, densely bubbled, olive green (5Y) bumpy fragments were all that remained of this figured flask. The moulded design could not be identified. Figured flasks were mouth-blown in two-piece moulds in a wide variety of colours and designs depicting a myriad of figures, personages and events. The flasks were popular containers for liquor in the United States from the 1820s to about the 1870s; however, their popularity was waning in the 1850s and by about 1870 designs were superficial or non-existent (McKearin and McKearin 1948: 456-57, Wilson 1972: 70). The Fort Anne example could have been made during this period and due to the continuous contact by sea between Annapolis, Digby and Boston, figured flasks were not unexpected occurrences at the site.

Specimen 2 (5B4D2-2)

A shoulder fragment from an olive green (7.5Y) ribbed flask was found. It would have been mouth-blown in a mould, probably two-piece. The ribs were vertical, slightly curved, 4 mm wide and 9-12 mm apart but coming closer together toward the neck. This fragment could have been from a "common ribbed Pocket Flask" or "Common Ribbed Pint Flask" as advertised for sale in 1824 and 1825 by Thomas Dyott of the Philadelphia and Kensington Vial and Bottle Factories (McKearin 1970: 36-37), or from the end ribbing common to many figured flasks. A complete ribbed flask was found on the *Caesar*, a merchantman wrecked off Bermuda in 1818 (Peterson 1965: Pl. 51, fig. 7). If the fragment was from a ribbed flask, it pre-dated figured flasks but quite possibly would not have survived the period of their immense popularity.

Specimen 3 (5B2B3-17)

This flask was typified by a regular hobnail pattern on the front and back of the body, joined at the ends by horizontal ribs, all separated from the base by two ridges encircling the body at the heel (Fig. 8). The base was oval, asymmetrical, slightly concave and bore the remains of a glass-tipped pontil. Necks on known complete examples were slightly concave in profile and finished with a cracked-off, then fire-polished, lip. The flask was mouth-blown of pale green (5GY) bubbled glass in a two-piece mould which left a thick mould line bisecting the body and basal surface. Glass distribution was uneven and especially thick in the base.

Flasks of this type are not common and other fragments have been found at Fort Beauséjour, New Brunswick, Fort Lennox, Sillery and Coteau-du-Lac, Quebec (Jones, personal communications). Complete examples are illustrated by Larsen et al. (1963: 211) as pocket flasks; by Van Rensselaer (1969: 43) as hobnail flasks, and Munsey (1970: 163) as poison bottles. The assumption that these flasks are poison bottles is interesting, but I am more inclined to believe they are a type of figured flask because they have used the same method of manufacture, decorative technique, form and size as is common to many figured flasks. As previously stated, figured flasks were popular about 1820 to 1870; however, Ken Wilson (personal communication) dated this flask 1815-25 due to the heavy glass used in its manufacture. It could be of American or European manufacture but the former seems most likely in light of the contact between New Englanders and the people of Annapolis Royal.

Plain Liquor Flasks

Ten to 16 plain liquor flasks found at Fort Anne were distinguished by their oval or flattened bodies and short necks topped with "wine" finishes (high downtooled lip, small rounded string rim) and stopper-finished bores (Whitall, Tatum and Company 1887: 10). They occurred mainly in shades of pale green with the occasional example in amber or clear glass. Most appeared to have been mouth-blown in two-piece body moulds with a separate base piece, resulting in mould lines vertically bisecting the body and neck and horizontally separating the body from the base. Finishes were formed by a lipping tool. Only distinctive or different flasks are described below.

The appearance of flasks of this type coincided with the disappearance of figured flasks in the 1870s, a logical

end to the gradual degeneration of figured flask designs. At first simply called "pocket" flasks (Hagerty Brothers 1876: 244), later stock shapes became known in the trade by such names as "shoofly," "book" and "picnic" flasks and were available in a variety of capacities from one-quarter pint to one quart. Clear glass flasks do not seem to have been popular until the 1890s; however, green and amber were common throughout the flask period (1870-1920s).

Specimen 1 (5B1E3-1)

This specimen, the only complete example of a "shoofly" or "coffin" flask, was typical of half a dozen flasks found (Fig. 9c). It was mouth-blown turquoise (7.5BG) glass and was devoid of any identifying marks. The body had a regular oval horizontal cross section and a vertical cross section in the shape of a tapered rectangle with an arched top; hence its popular name "coffin" flask. The base was smooth and slightly concave. This flask could have been manufactured between the 1870s and the 1920s but probably would not have been made much after the very early 1900s.

Specimen 2 (5B1G4-1)

This flask (Fig. 10) appeared to be the only "book" flask found and was one of three clear glass flasks. Mouth-blown of finely bubbled glass, the body had the shape and size of a thick paperback book. The lip was shorter than usual but aside from that the finish was characteristic of flask finishes as described previously. The oval base had a flat bearing surface outlined by a mould line. Within the bearing surface was an oval concavity upon which was embossed 6477R, possibly a registration number. The capacity of this flask appears smaller than the shoofly flask in Figure 9, but it actually held 1 oz more.

Specimen 3 (5B2H3-7)

A rounded neck ring called a "ball-neck" distinguished this flask neck fragment from the others. The ring was situated at the base of the neck 9 mm below the finish and was part of the mould, not part of the finishing process. Above the ring were horizontal striations which marked the lower limits of the finishing tool. Ball necks, while not common on flasks, were not unheard of and could appear on a flask of any shape and were probably a decorative rather than practical feature. As this fragment was made of clear glass, it may be assumed it was manufactured toward the end of the period of flask popularity.

Specimen 4 (5BlJ2-1)

This specimen was represented by a hand-finished dark amber (7.5YR) neck and was the only flask of this colour found. The neck was complete but not enough of the shoulder was present to distinguish its body shape.

Specimen 5 (5BlG5-3)

Another flask that differed slightly was represented by an aqua (7.5GY) neck and stopper held in place by its original lead foil seal or "capsule" (Fig. 11a). Capsules were originally used to protect the cork from weevils, but are now a decorative tradition found on many wine and liquor bottles (Mendelsohn 1965: 72). Embossed on the top of the capsule in a circle around its outer edge was a border of dots broken in one area by the miniscule letters CAPSULE MADE IN BAVARIA. Embossed within and following the line of the border was JAMES WATSON & Cº ·DUNDEE· and within the circle formed by this inscription was embossed SCOTCH/ WHISKEY with a tiny four-section diamond above and below the letters. Unfortunately little is known about Watson's distillery aside from the fact that it was a large and prosperous Dundee concern that ceased production under the above name in 1923 (Lockhart 1951: 96). The flask was probably manufactured in the British Isles and possibly somewhat earlier than the other flasks as the finish was rather asymmetrical with a downtooled and not rounded string rim.

Glass Stoppers

Twelve glass stoppers were found at Fort Anne and were typified by a more or less flat head and a tapered cylindrical shank. An effective closure was made when this type of stopper and a tube of cork, called a "shell" cork, were inserted into a stopper-finished bottle neck. The cork sat on the ledge inside the bore and the stopper fitted snugly inside the cork and projected well down into the neck. The cork remained inside the bore whenever the stopper was removed, the ledge preventing the cork from falling into the bottle (Putnam 1965: 82) (Fig. 11).

All of the stoppers were pressed, most probably in a single or multiple stopper mould, a machine patented in 1841 which could produce at least 10 stoppers of different sizes at once. Upon removal from the mould the stoppers were attached by their shanks to a central disc of glass from which they radiated in a sunburst pattern (Watkins 1942: 370). They were broken off the disc when needed, leaving a

jagged tip on the stopper shank. The stoppers from Fort Anne could have been made in a variation of this method.

Although flasks were not the only bottles with stoppers of this type, they were the only bottles found at Fort Anne with stopper finishes; thus it seemed reasonable to discuss stoppers at this point since most or all of them would have related to the flasks. Their date of manufacture would, therefore, coincide with that of the flasks: from about the 1870s to the 1920s.

Specimen 1 (5B1E9-9)

Stoppers were usually differentiated by their head shapes, in this case an amber (5YR) "flat hood" stopper (Whitall, Tatum and Company 1887: 8; Fig. 9a). Four stoppers of this type were found in pale green, two others in amber and two in clear glass. Often the glass was quite bubbled. The upper surface of the head was slightly concave or convex, and not always completely flat. All of the Fort Anne examples had a mould line around the lower edge of the head and in four cases mould lines bisected the shank. The tip of the shank, when present, was jagged.

Specimen 2 (5B2B2-12)

This was the only example of a "club sauce" stopper, a type distinguished from flat hood stoppers by a bevel around the top edge of the head (Whitall, Tatum and Company 1887: 8). The lone example from Fort Anne was pale green (7.5BG) and slightly bubbled. No mould lines were present but the lower edge of the head, where a mould line would be expected, was chipped.

Specimen 3 (5B1G6-1)

Although basically similar in form to the previous stoppers, this aqua (2.5G) specimen (Fig. 9b) had a rounded or elliptical head. Mould lines bisected the shank ending on the under surface of the head. The head did not appear to have been formed in a mould. This stopper was in all probability similar in use and date to the preceding ones.

Cylindrical Liquor Bottles

Six to ten light-coloured cylindrical liquor bottles were found at Fort Anne, and all except one appeared to have

been similar in colour and shape. They were made of heavy pale green (10GY-2.5GY) glass with a cylindrical body, rounded shoulder, a bulged cylindrical neck finished with a tall downtooled lip and short downtooled string rim, and were blown in a three-piece mould. Base plates were probably used to emboss the bottle bottoms and paper labels would have identified the contents.

Bottles similar to this shape were made in black glass from about 1820, but by 1860 were increasingly made in lighter coloured glass for the liquor trade. The shape was called a "London Gin" in the Hagerty Brothers catalogue of 1876 (p. 240) and was available in light green glass in a fifth or sixth of a gallon. In the 1920s Dominion Glass bottlers' catalogue (n.d.) the shape was called a "Tom Gin" (p. 20), "Wine" (p. 34) and "Scotch Style Whiskey" (p. 35). As no colour was specified, these names may have pertained to colour as well as shape.

Specimen 1 (5B1G40-5)

This example was typical of the pale green liquor bottles. It had a thick cylindrical body above a base formed by a flat band which slanted in toward a circular concavity upon which various numerals were embossed (Fig. 12b). In this case the embossing consisted of a central mamelon, an "O" above it and an undecipherable three- or four-digit number below it. The glass was pale green (5GY) and quite bubbly.

Specimen 2 (5B1K7-8)

Only a pale green (7.5GY) bubbled base fragment remained of this bottle similar to specimen 1. Embossed on this base was 27 or L3.

Specimen 3 (5B1G16-2)

This bottle, represented by a pale green (5GY) base-body fragment, is distinguished from the two previous bases in that its basal profile was rounded instead of angular. Embossed on the basal surface was the number 630, most likely the mould number.

Specimen 4 (5B1G26-3)

This fragment was the only neck found with its finish intact. It was made of bubbled aqua (5GY) glass and had a bulged neck with a vertical mould line disappearing under the finish (Fig. 12a). It was hand-finished with a downtooled lip and string rim as described previously. The

weld between the finish and neck was quite apparent, possibly indicating manufacture before common use of the gas-fired gloryhole in the 1870s.

Specimen 5 (5B2B3-14)

The one cylindrical liquor bottle that varied at all from the preceding examples was represented by several fragments of densely bubbled green (7.5GY) glass. The cylindrical body had a rounded heel which joined a bell-shaped push-up. At the tip of the push-up was a large mamelon 21 mm in diameter and 10 mm high. A mould for a bottle with this type of base is illustrated by Henrivaux (1897: Pl. XXVII) and is known in that publication as the "Houtart System." The mould is made up of two champagne-shaped shoulder pieces and a convex-based cylindrical dip-moulded body part, but in the centre of the base was a rod with a concave tip that acted like an automatic pontil pushing the now convexly rounded base into a bell-shaped push-up. Due to the depression in the tip of the rod, a downward projecting dome or mamelon would occur at the tip of the push-up.

It is probable that bottles of this type were not manufactured before the 1880s. An Illinois Glass Company catalogue of 1903 illustrated several bottles with this type of base, but variations of a champagne shoulder, calling them "Claret," "Sauterne," "Cognac" and "Burgundy" bottles. The only bottle of this type in the Dominion Glass catalogue of the 1920s is referred to as a "Wood's Brandy" bottle.

Beer Bottles

As previously mentioned, beer (as well as ale, porter and stout) was put up in ordinary black glass bottles as were other spirits, but by the 1840s distinctive shapes for beer in black and coloured glass were developing (McKearin 1970: 105). Some of these shapes were similar to the soda and mineral water bottles being developed at the same time, and today many of these cannot be distinguished. Others were more specifically beer such as "champagne" beer and "export" (bulged neck, rounded shoulder) beer bottle shapes.

Specimen 1 (5B1K7-4)

This specimen was typical of at least five beer bottles from Fort Anne. It had a cylindrical body with a sloping champagne-shaped shoulder and a cylindrical neck with a tall flat or sloping lip (Fig. 13). It was mouth-blown in a

three-piece mould of dark olive green (7.5Y) "black" glass which was pitted and bubbled. The base had a slugged bottom with a rounded conical profile. The basal surface was not empontiled and bore a large embossed X K separated by a central mamelon. Similar figures occur on the bases of beer bottles from other sites: CX and X1.K on bottles from the Custer Road Dump Site (Brose and Rupp 1967: 93, 95) and 7.K on a bottle from the Fortress of Louisbourg. Such a bottle, since it was not empontiled, could date any time from the 1850s or 1860s to the early 1900s, but probably was not made much later than the 1890s.

Specimen 2 (5B1K7-6)

This bottle was identical to specimen 1 except the figures on the basal surface were inverted, reading K.X instead of X.K. Simple basal markings like these seem to be common to beer bottle bases but unfortunately I am not aware of their purpose.

Specimen 3 (5B4N1-2)

This bottle was represented by a dark olive green (7.5Y) neck with a tapered profile but a more distinct neck-shoulder junction such as would be found on a plain cylindrical bottle with a rounded shoulder. It was hand-finished with a tall flat lip. Faint striations on the neck would suggest the bottle was made in a turn mould which in turn suggests the bottle had a generally later date of manufacture than the above specimens, that is, the last quarter of the 19th century.

Specimen 4 (5B1G5-7)

This bottle was represented by a base fragment of dark green (5GY) finely bubbled glass. The body was cylindrical, approximately 60 mm in diameter and most probably formed in a three-piece mould. The unempontiled basal surface was concave to a height of 16 mm and had embossed on it "...24" about a central mamelon. This bottle probably originally held beer after the 1850s or 1860s but before the 1900s.

Specimen 5 (5B1K4-3)

Another possible beer bottle was represented by a base fragment of olive green (7.5Y) glass having a basal diameter of approximately 80 mm. The basal surface was smooth and concave and bore a small embossed C near one edge. The date of manufacture of this bottle would have been similar to that of the previous example but closer to the end of that period.

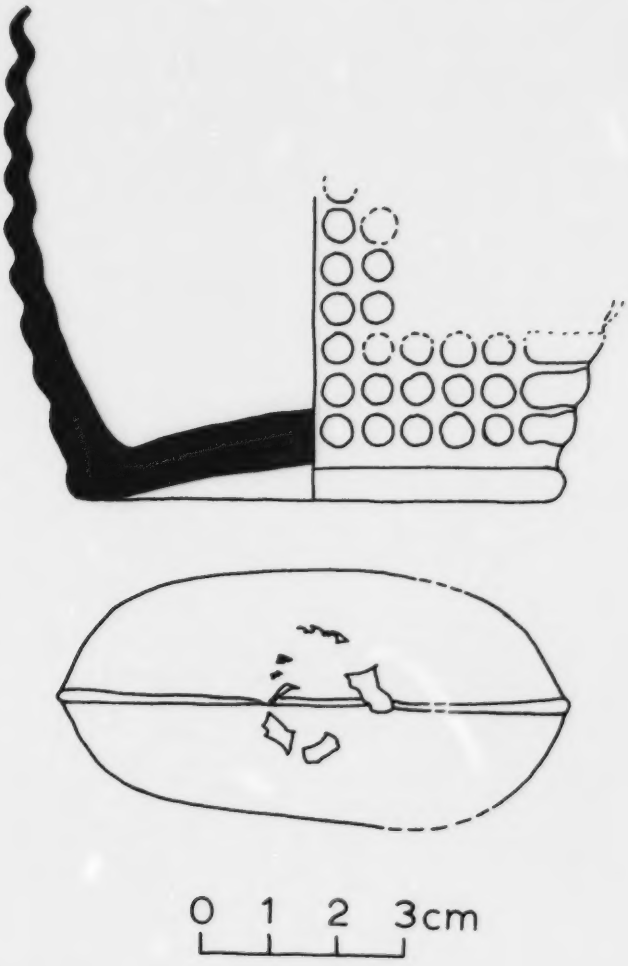


Figure 8. Cross section, profile and basal view of a figured flask (5B2B3-17). Dimensions are in millimetres:

Base length	74
Base width	39
Push-up ht.	4
Pontil mark diam.	25

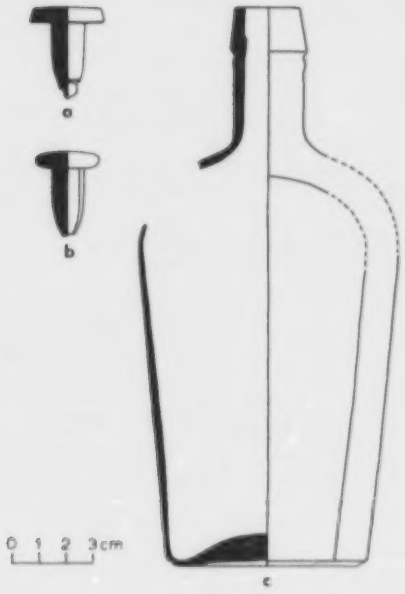


Figure 9. Two pressed glass stoppers and a mouth-blown shoofly flask. Dimensions are in millimetres:

a) Flat hood stopper (5B1E9-9)

Head ht.	5
Head diam.	26-27
Shank ht.	21
Shank diam.	13
Stopper ht.	34

b) Unidentified stopper (5B1G6-1)

Head ht.	6
Head diam.	23
Shank ht.	24
Shank diam.	12
Stopper ht.	30

c) Shoofly flask (5B1E3-1)

Lip ht.	17
Lip diam.	27-29
String rim ht.	6
String rim diam.	27
Finish ht.	25
Neck diam.	26
Neck ht.	55
Body width at shoulder	96
Body width at base	75
Body thickness	38
Push-up ht.	2
Bottle ht.	209
Bottle volume	11 oz

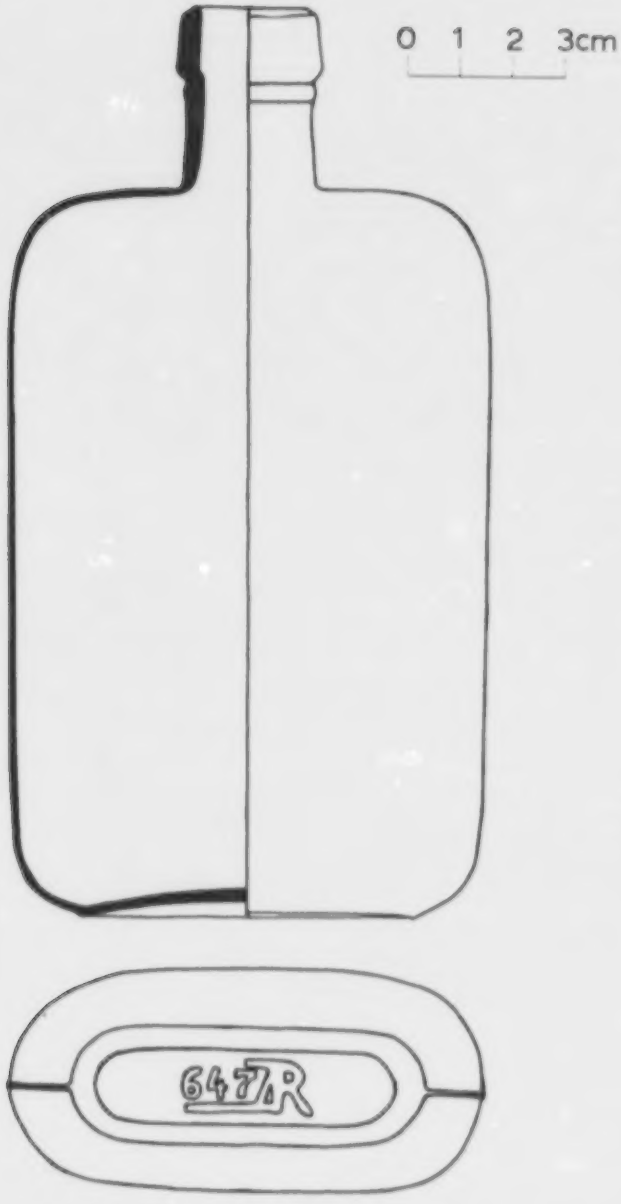


Figure 10. Book flask (5B1G4-1). Dimensions are in millimetres:

Lip ht.	13	Body width	92
Lip diam.	28	Body thickness	43
String rim ht.	4	Body width at base	90
String rim diam.	25	Foot thickness	4
Finish ht.	18	Push-up ht.	3
Neck diam.	25	Bottle ht.	173
Neck ht.	35	Volume	12 oz

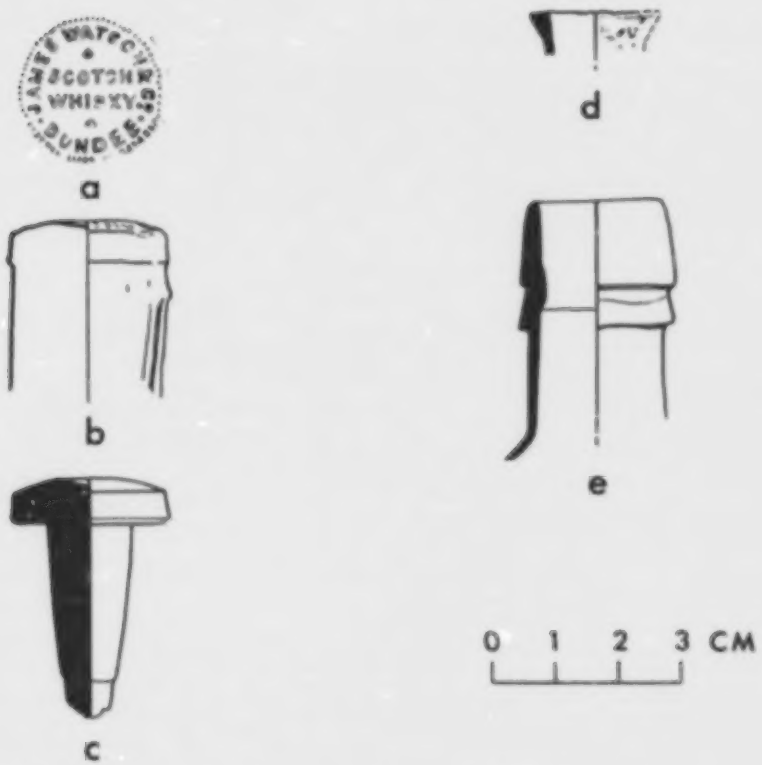


Figure 11. Exploded view of liquor bottle neck fragment complete with cork, stopper and capsule (5B1G5-3). Dimensions are in millimetres:

a) Top view of capsule

b) Profile and cross section of capsule

c) Stopper

Head ht.	7
Head diam.	25
Shank ht.	32
Shank diam.	13
Stopper ht.	39

d) Shell cork

e) Flask neck

Lip ht.	14
Lip diam.	25
String rim ht.	6
String rim diam.	26
Finish ht.	20
Neck diam	22
Neck ht.	38

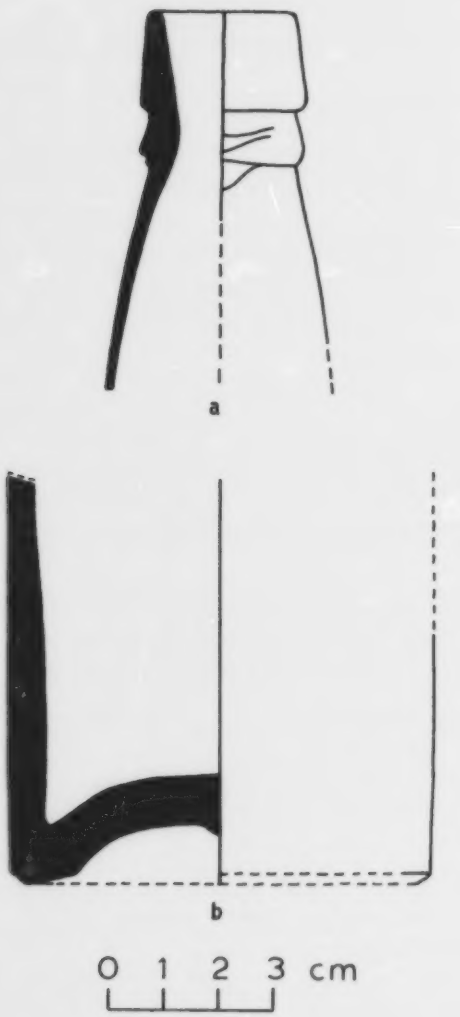


Figure 12. Pale green liquor bottle neck and base. Dimensions are in millimetres:

a) Neck fragment (5B1G26-3)

Lip ht.	18
Lip diam.	28-30
String rim ht.	9
String rim diam.	30
Finish ht.	26
Neck diam. under finish	28

b) Base fragment (5B1G40-5)

Body diam.	78
Base diam.	76
Push-up ht.	11
Diam. basal depression	51

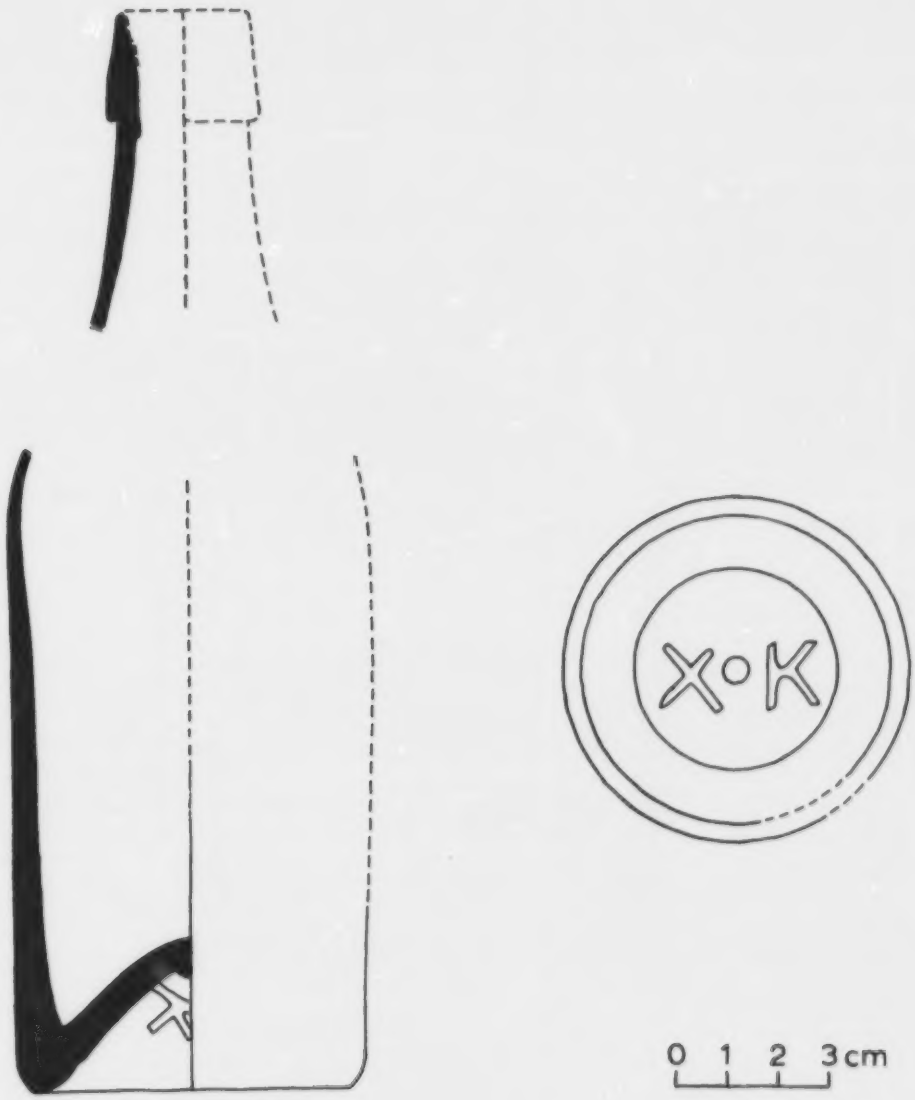


Figure 13. Beer bottle (5BlK7-4), approximately two-thirds actual size. Dimensions are in millimetres:

Lip ht.	22
Base diam.	69
Push-up ht.	23
Lettering ht.	15
Mamelon diam.	5

DRUGGISTS' AND PROPRIETARY MEDICINE BOTTLES

Druggists' bottles were those used by druggists to dispense prescriptions and medicines. The bottles were usually regular stock shapes such as the "French Square," the "Blake" or the "Philadelphia Oval," common shapes manufactured by a large variety of English, American and Canadian glass companies throughout the late 19th century. They were manufactured in green and clear glass, but after 1900 a preference was shown for clear glass (Rosewarne 1972: 3). A druggist often distinguished his bottles from those of a rival druggist by means of embossing, paper labels or both, devices which in turn served as a means of advertising. Embossing after the 1860s was generally and more cheaply done by means of a letter plate which could be inserted into a panel or a flat - later curved - section of the bottle mould. The perimeter of the plate was often indicated by mould lines.

Proprietary or patent medicine bottles were often similar in shape to druggists' bottles, being distinguished by their labelling, paper or embossed, and sometimes by a style or shape peculiar to the medicine they contained, one of the better known examples being the angular fiddle-shaped Turlington's Balsam of Life bottle. Proprietary medicines were owned or patented by a particular manufacturer and often bottled by several different companies for distribution over a wide area.

There were almost two dozen druggists' and proprietary medicine bottles recovered from the excavation at Fort Anne. Identification was based primarily on contents as indicated by embossed labelling. Bottle manufacturer and body shape were also used.

Marked and Identified Bottles

Specimen 1 (5B1G40-3)

One large pale green (2.5G) mouth-blown body fragment was all that remained of this bottle, most probably a Philadephia oval (an oval bottle with one flat side). Embossed on the flat side of the body by means of a letterplate was the following: A.B. CU[NNI]NGHA[M], a mortar and pestle device, and DR[UGGIST] (Fig. 14). Arthur B. Cunningham was a resident of Annapolis Royal and the proprietor of the Annapolis Royal drugstore from at least as early as 1883 until his death between 1894 and 1896 after which A.E. Atlee became manager of the store. The store

dealt in "Drugs, Chemicals, Patent Medicines, Toilet Articles, Perfumes, Stationery and Books, Fancy Goods, Fishing Tackles, Views of Old Fort and District, Souvenir Articles, Cigars, Pipes and Tobaccos" (Belcher's Farmer's Almanac 1883: 165; McAlpine's Nova Scotia Directory 1896: 500-1).

Specimen 2 (5B2G2-26)

Only a fragment from a small clear glass base remained of this bottle. The base appeared to have the shape of a Philadelphia oval. It was footed and bore the embossed letters WT&CO/AG/USA within the basal depression (Fig. 15c). Lettering was also evident on the small portion of the lower body where the letter S ended two rows of vertical lettering on the flat letter-plated surface. The bottle may have been mouth- or machine-blown.

Whitall, Tatum and Company (denoted by WT & CO) of Millville, New Jersey, were manufacturers and distributors of druggists', chemists' and perfumers' glassware from 1857 until 1938. Among their Canadian customers were chemists and druggists in Nova Scotia before the mid-1880s and to a lesser extent afterward because of the establishment of local glassworks. The Whitalls and Tatum first got together in 1848 to form Whitall Brothers and Tatum but in 1857 they became Whitall, Tatum and Company and used the trademark W T & CO until 1935 (Toulouse 1971: 544-45). Lettered plate ware was made at the factory as early as 1868 (Pepper 1971: 230) so the Fort Anne fragment would not have been from a bottle made before this date.

Specimen 3 (5B2B3-11)

This bottle was represented by a small, flat fragment of green (2.5G) glass apparently from a small panelled bottle. Only part of the embossing was present: [NO]RT[HROP &] / LY[MAN] / [TO]RON[TO] (Fig. 15e). Northrop and Lyman were general agents for a number of proprietary medicines in Canada and the United States. Their advertisements began appearing in the 1850s and were still appearing as late as 1910 (Provick 1971b: 21); however, they did not have an office in Toronto until 1875 (Rosewarne, personal communication).

Specimen 4 (5B1G40-2)

This bottle was a Philadelphia oval and had a letterplate embossing but only part of the lettering was present: ...ALLAN'S...IRON / ... [TO]NIC (Fig. 16). The

basal surface was smooth and concave with no manufacturing marks of any sort. Mould lines marked the divisions between body and base, and body and letterplate. The bottle had most probably been mouth-blown in a two-piece mould.

Regarding identification, no information or even mention of anything similar to Allan's Iron Tonic, or a druggist named Allan, could be found. Judging by the manufacturing features of the bottle it would seem most likely that it was made after the 1850s and probably before 1900.

Specimen 5 (5B1G40-4)

One of the more complete druggists' bottles, this bottle was made for M.F. Eagar, a druggist in Halifax, Nova Scotia. It was a mouth-blown bottle, pale green (10GY) and panelled on three sides with chamfered corners. Embossed down the front panel of the bottle was EAGAR, down the left side HALIFAX, [N.S.], and down the right side ...E (Fig. 17). The basal surface was plain and smooth with no manufacturing marks. The neck was a plain cylinder topped with a high patent or deep lip.

According to the city directory, from 1871 to at least 1880, M.F. Eagar had a shop on Hollis Street in Halifax and was also a resident of the city. In 1885 and 1886 he is listed among the chemists and druggists of Windsor, Nova Scotia, but by 1887 he had returned to Halifax. There were no references to him again until 1896 when he was no longer listed as a chemist and druggist but had become a commercial merchant on Pickford and Black's wharf in Halifax. At this time he resided in Dartmouth. (Lovell 1871: 221; Belcher's Farmer's Almanac 1885: 198; ibid. 1886: 194; ibid. 1887: 190; McAlpine's Nova Scotia Directory 1896: 141; Blakeley 1949: 18).

Apart from directories, reference to M.F. Eagar was found embossed on bottles made at the Lamont Glass Company of Trenton, Nova Scotia, between the years 1890 and 1902. The bottles were similar in shape to the one described here and were embossed EAGAR'S / WINE OF RENNET (MacLaren 1968: 41).

Specimen 6 (5B2D4-19)

Only a small pale blue-green (2.5BG) body fragment remained of this bottle but embossed on the fragment was [R. R.] R. / [RADWAY &] CO / [NEW YORK] (Fig. 15b). The body was rectangular with chamfered corners and was most probably mouth-blown in a two-piece mould. Radway and Company was established in New York City in the mid-1840s and continued to operate into the 20th century (Wilson and

Wilson 1971: 75, 134). It is probable this bottle was manufactured after the 1850s, as it is not empontiled, but not later than the 1920s. Other R.R.R. Radway bottles have been found at Fort George, Ontario, and Payne's Cove, Gros Morne Park, Newfoundland (Institute of Social and Economic Research 1973: 15) and in a 19th-century archaeological context at the Fortress of Louisbourg. To my knowledge, none have been found in the western part of the country.

Specimen 7 (5B2B4-10)

This bottle was represented by a blue-green (10G) cylindrical body fragment that may have been machine-made or mouth-blown (Fig. 18b). Embossed vertically on the body was: [MRS.] WINSLOW'S / [SOO]THING SYRUP / [THE ANGLO AME]RICAN D[RUG CO.] / [SUCCESSO]RS T[O] / [CURTIS &] PERK[INS] / [PROPRIE]TOR[S] (Fig. 18a). Mrs. Winslow's Soothing Syrup had been popular since the 1840s for soothing teething babies. In 1880 the Anglo American Drug Company succeeded Curtis and Perkins as proprietors of the medicine (Wilson and Wilson 1971: 145-46). Its popularity may be traced to its active ingredient, morphine, the use of which was prohibited in patent medicine in 1912 in England and 1921 in the United States (Monroe 1967: 113). It is possible this led to the decline in the popularity of Mrs. Winslow's Soothing Syrup about this time.

Specimen 8 (5B2C5-1)

A pale green (2.5G) body fragment from an eight-sided or more likely rectangular bottle with wide chamfered corners was all that remained of this bottle; however, embossed down one side was [BI]TTE[RS] (Fig. 15a). Although I was not able to positively identify this bottle the possibilities were very limited by its unusual body shape and the type and positioning of the lettering. Three bottles filled all the physical requirements of colour, shape, lettering style and position. They were Johnson's Indian Dyspeptic Bitters, a rare bottle; Colleton Bitters manufactured in South Carolina, and S.O. Richardson's Bitters from South Reading, Massachusetts. The latter was the most likely manufacturer of the fragment in question. It is considered by collectors to be a common bottle and was from an area that traded heavily with western Nova Scotia. Therefore it seems most likely that the fragment was from a rectangular bottle with wide chamfered corners, embossed on the front with S.O. / RICHARDSON'S, one end with BITTERS, and on the opposite end with SOUTH READING MASS. The Richardson family was in the bitters business throughout most of the 19th century but it is probable that this bottle was manufactured around the middle of the century (Wilson and Wilson 1971: 49, 77, 135; Watson 1965: 89).

Specimen 9 (5B2K2-23)

Only a small body fragment remained of this pale green (7.5G) liniment bottle. It may have been 12-sided like a fluted prescription bottle or 8-sided with a plain curved back as were many liniment bottles. Each side was 12 mm wide. Embossed down one of four existing sides in sans serif letters was ...[LIN]IMEN[T].

A large number of embossed liniment bottles have been found at excavations of the three glasshouses in Trenton, Nova Scotia, bearing such names as Minard's Liniment, Woodbury's Horse Liniment, Bentley's Liniment and Empire Liniment and one of these houses, the Lamont Glass Company, apparently had part of a shop that produced nothing but Minard's Liniment bottles (Vienneau 1969: 21). It is quite possible this bottle was manufactured in Nova Scotia at one of these factories whose combined operations covered the years from 1881 to 1914. The possibility of American manufacture cannot be overlooked, however, but in either case the bottle was probably manufactured toward the end of the 19th century or during the early 20th century.

Marked and Unidentified Bottles

Specimen 1 (5B4L2-11)

Embossed on a flatish pale green (7.5G), panel fragment were the tail ends of three rows of lettering: ...RS, ...LEY and ...AL (Fig. 15d). This bottle could not be identified.

Unmarked Bottles

Specimen 1 (5B1K7-5)

This bottle was complete to its neck (Fig. 19). It was a small pale green (7.5G) bottle whose trade name, "fluted prescription," stemmed from its body shape of 12 flat panels, not really flutes, each slightly arched at the top. The shape is also known as a "liniment without embossing" (Vienneau, personal communication). The base, also 12-sided, had a shallow depression at the centre but no pontil mark. The bottle was mouth-blown in a two-piece mould.

Plain fluted prescription bottles seem to have been popular during the last half of the 19th century and appear in druggists' ware catalogues throughout this period in a variety of sizes from 1/4 to 32 oz. Sizes from 2 to 8 oz were available in Canada in clear, amber and light green

glass from Diamond Flint, in operation from 1902 to 1913; Beaver Flint, in operation from 1898 to 1920, and Dominion Glass, in operation from 1913 to date. They disappeared from American glass catalogues by the beginning of the 20th century. As this bottle was mouth-blown but not empontiled, it dates from the 1850s to the early 1920s.

Specimen 2 (5B2B2-9)

This bottle was represented by a neck fragment of pale green (7.5G) glass and although it could not be positively identified, it may have been a neck from a fluted prescription bottle (Fig. 20b). Fluted prescription necks were often plain short cylinders with a hand-finished patent lip like this one. The neck then joined a short rounded shoulder. This bottle would date from the 1870s to the early 1920s.

Specimen 3 (5B1G9-4)

This was a light green (2.5G) panelled bottle mouth-blown into a two-piece mould (Fig. 20a). Two mould lines vertically bisected the bottle along opposite corners ending part way up the neck. The front and back panels were arched at the top to follow the contour of the shoulder. The ends of the bottle were not present and they may or may not have been paneled. The neck was a plain cylinder with a handtooled ring finish. The ring finish was used on castor oil and cod liver oil bottles, but was by no means exclusive to these bottles even though it is sometimes referred to as a "castor oil finish" (Whitall, Tatum and Company 1876: 4). Cod liver oil bottles customarily had a longish neck with a ring finish and a panelled body as this specimen did, and it may have been a castor oil or cod liver oil bottle in use after the 1850s but probably not later than the early 1900s.

Specimen 4 (5B1K1-2)

Another bottle was represented by a hand-finished neck with a patent lip. The lip was 7 mm high and 32 mm in diameter and made of fairly heavy light green (10G) glass. Mould lines were present on the lower portion of the neck indicating the body was mouth-blown in a two-piece mould. It would have been from a druggists' or proprietary medicine bottle manufactured between the 1870s and early 1920s.

Specimen 5 (5B1G5-6)

This specimen was also a neck, similar to the previous

one except that it was finished with a prescription lip instead of a patent lip and the glass was slightly yellower (7.5GY). It too was from a druggists' or proprietary medicine bottle manufactured between the 1870s and 1920s.

Specimen 6 (5BlK7-7)

Another bottle is represented by a pale green (2.5G) neck fragment, hand-finished with a prescription lip. Its date of manufacture does not differ from the above.

Figure 14. Druggists' bottle, A.B. Cunningham (5B1G40-3).
Dimensions are in millimetres:

Letterplate width	46
Letterplate ht.	±101
Lettering ht.	10

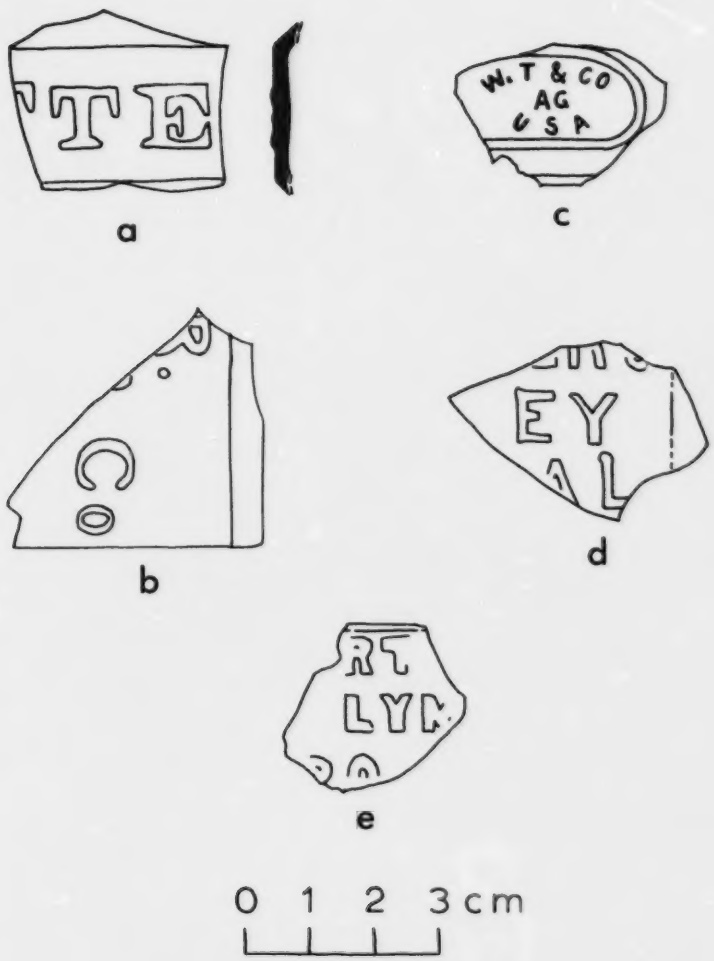


Figure 15. Marked druggists' or proprietary medicine bottle fragments. Dimensions are in millimetres:

a) S.O. Richardson's Bitters (5B2C5-1)
   Side width 22
   Lettering ht. 11

b) R.R.R. Radway & Co. (5B2D4-19)
   Lettering ht. 8

c) Whitall, Tatum & Co. (5B2G2-26)
   Lettering ht. 3

d) Unidentified fragment (5B4L2-11)
   Lettering ht. 7

e) Northrop & Lyman (5B2B3-11)
   Lettering ht. 7

Figure 16. Proprietary medicine bottle, Allan's... Iron...Tonic (5B1G40-2). Dimensions are in millimetres:

Base width	62
Base thickness	49
Basal depression ht.	3
Letterplate width	48
Lettering ht.	11

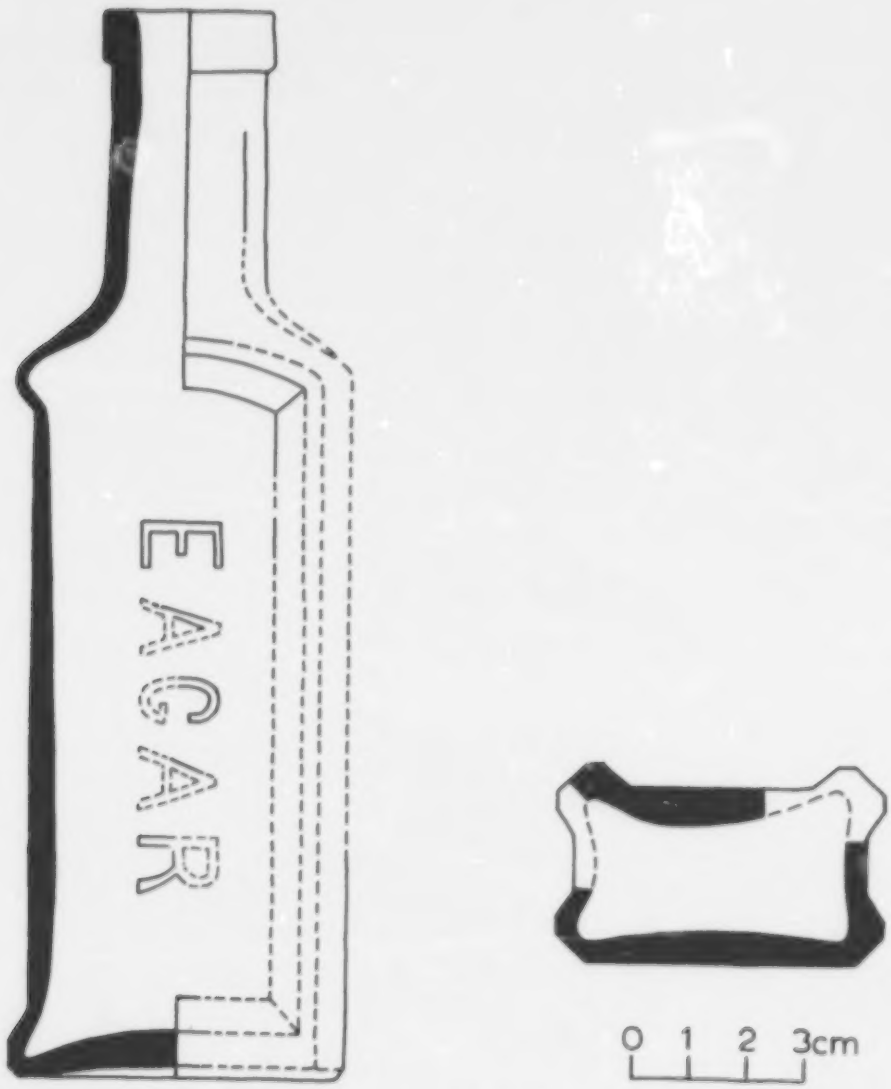
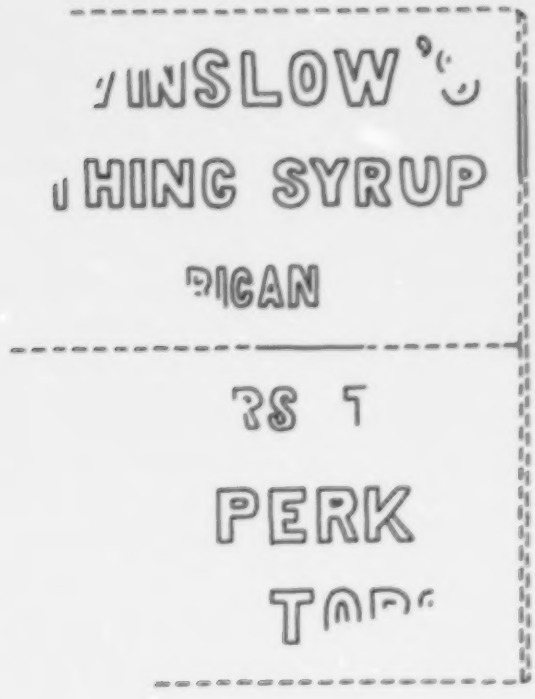


Figure 17. Druggists' bottle, M.F. Eagar (5B1G40-4).
Dimensions are in millimetres:

Lip ht.	10	Body width	58
Lip diam.	30	Body thickness	36
Neck ht.	51	Base length	57
Neck diam.	26	Base width	35
Front panel width	31	Basal concavity	2
Front panel ht.	±105	Bottle ht.	±192
Lettering ht.	14		
Side panel width	12		
Lettering ht.	9		



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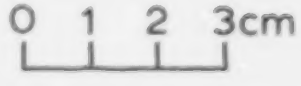


b

Figure 18. a, An "unwrapped" body view of a proprietary medicine bottle, Mrs. Winslow's Soothing Syrup (5B2B4-10) and b, profile and cross section. Dimensions are in millimetres:

Extant bottle ht.	73
Body diam.	31
Lettering ht. (small)	5
Lettering ht. (large)	8

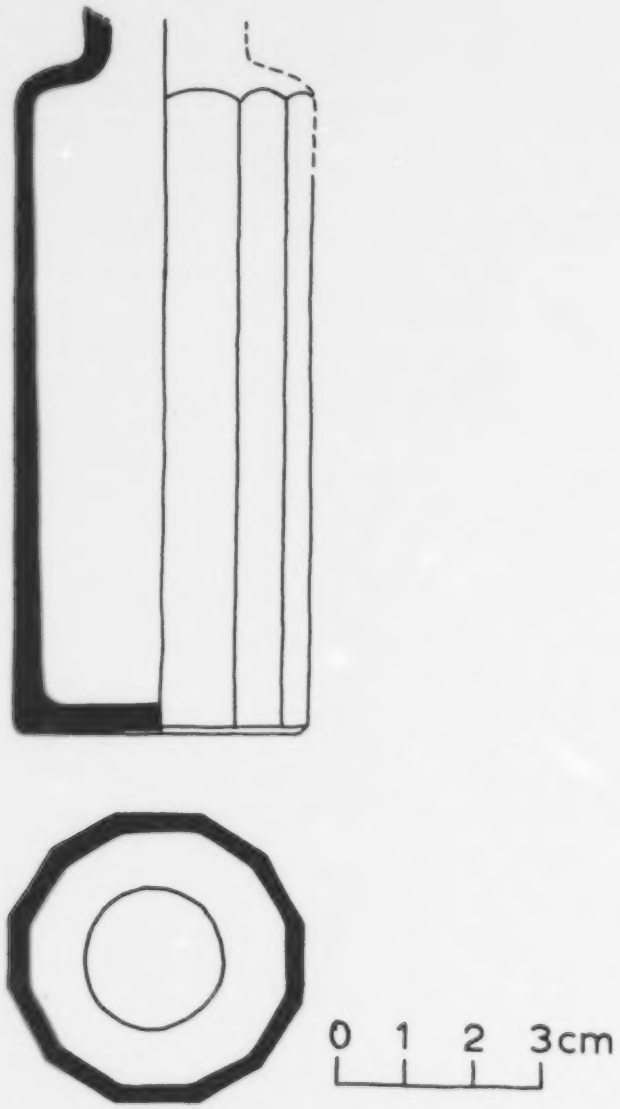
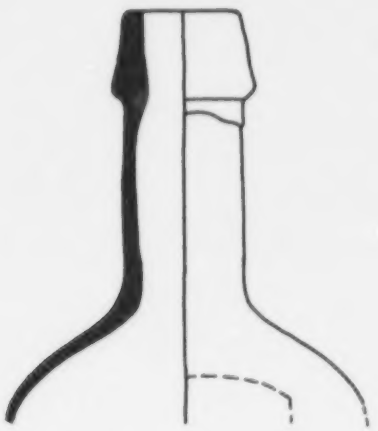


Figure 19. Fluted prescription bottle (5BlK7-5).
Dimensions are in millimetres:

Neck diam.	25
Panel width	12
Panel ht.	95
Circumscribed diam. base	45
Diam. basal depression	22
Depth basal depression	2
Volume	4 oz



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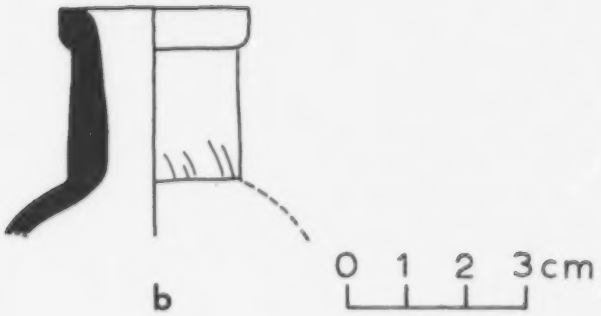

b

Figure 20. Medicine bottle necks. Dimensions are in millimetres:

a) Possible castor oil neck (5B1G9-4)

Lip ht.	14
Lip diam.	21-25
Neck ht.	47
Neck diam.	21
Panel ht.	103
Panel width	35
Bottle ht.	175

b) Possible fluted prescription neck (5B2B2-9)

Lip ht.	6
Lip diam.	32
Neck ht.	29
Neck diam.	28

SODA OR MINERAL WATER BOTTLES

The bottling of soda and mineral waters, either artificial or natural, in distinctive glass containers probably did not begin to any great extent until the 1840s. Although the egg- or torpedo-shaped soda water bottle was patented in 1814, it was not put into production until the early 1840s (McKearin 1970: 104). Shortly afterward came a variety of cylindrical bottles. As on many other types of bottles the contents, owner or the bottler of the contents - in this case soda or mineral water - could be indicated by embossing, paper labels or both. There were only three mineral or soda water bottles found at Fort Anne that did not appear to be handmade. This is interesting in light of the relatively large number of liquor bottles found from approximately the same period.

Specimen 1 (5B1C1-13)

The only identifiable soda water bottle was one made for William Eagle, a New York beer, soda and mineral water bottler in business as early as the 1850s and possibly earlier (Schmeiser 1970: 242). The bottle was cylindrical, a somewhat unusual blue-green (7.5BG) and exhibited the following embossing. Across one side of the lower body was [W. EAGLE / VES] TRY. [VARICK, / &] CANAL [S$^{T}_{Y}$S] and on the opposite side was [PREM^{m} SODA WATER / UNION GLASS] W[ORKS PHILA] (Tibbitts 1964: 41; Fig. 21). The basal surface was smooth and concave with a worn bearing surface. As there were no signs of empontiling, this bottle would date after the 1850s.

Specimen 2 (5B2A3-24)

An aqua (2.5BG) body fragment from a cylindrical soda or mineral water bottle represented the second specimen. Only a very small portion of the embossed label remained, ...B... bordered by a curved ridge, a section of the border around the oval embossed label which would have been formed by the letter-plate. The bottle could not be identified but probably related to the last quarter of the 19th century up to the first quarter of the 20th century.

Specimen 3 (5B1J1-1)

This fragment may have been from a flat-bottomed egg soda water bottle as the pale green (5GY) fragment had a

convex profile. Embossed horizontally around the lower body was ...NE.... This bottle could not be identified either but could date from the 1840s to the early 1900s.

Figure 21. Soda water bottle (5B1C1-10), W. Eagle's Premium Soda Water. Dimensions are in millimetres:

Base diam.	64
Push-up ht.	5
Lettering ht.	11

FOOD STORAGE CONTAINERS

The term "food storage containers" is used here to denote all those bottles in which foodstuffs were stored, sold or transported and includes a variety of bottles: fruit jars, pickle jars, mustard bottles, jelly glasses, and so on. Although these bottles varied considerably in shape and size they were usually similar in one practical aspect; that is, they had wide necks and mouths as necessitated by their bulky solid or semisolid contents.

With the exception of fruit jars, food storage containers are a largely ignored group. They are not yet popular with collectors and therefore have not elicited any great demand for information. Part of this unpopularity may be due to the fact that food storage containers often used paper labels in lieu of embossing and were competing with containers made of materials other than glass such as ceramics, wood and metal. Glass food storage containers recovered from Fort Anne were fragmentary and numbered less than a dozen in all.

Specimen 1 (5BlH2-7)

This first example was part of a small, pale olive green (10Y), square-sectioned condiment bottle (Fig. 22c). It was mouth-blown in a two-piece mould which left a diagonal mould line across the base. A glass-tipped pontil had been used. Small bottles of this type seem to have been popular in the last half of the 18th century and probably shortly thereafter, and could have been used for a variety of dry items such as spices or, even more particularly, mustard. It is probable they were the predecessors of later embossed condiment bottles.

Specimen 2 (5BlH17-2)

A second condiment bottle, but probably a later example, was represented by a small pale green (10GY) neck and shoulder fragment from a square-sectioned body with chamfered corners (Fig. 22b). A twice-folded lip topped the short, wide cylindrical neck. The glass colour, body shape and finish of this bottle closely resembled a group of embossed mustard bottles from Coteau-du-Lac (Jones 1974) from the late 18th to the the mid-19th century. Not enough of the Fort Anne fragment was present to determine the presence or absence of embossing on the body.

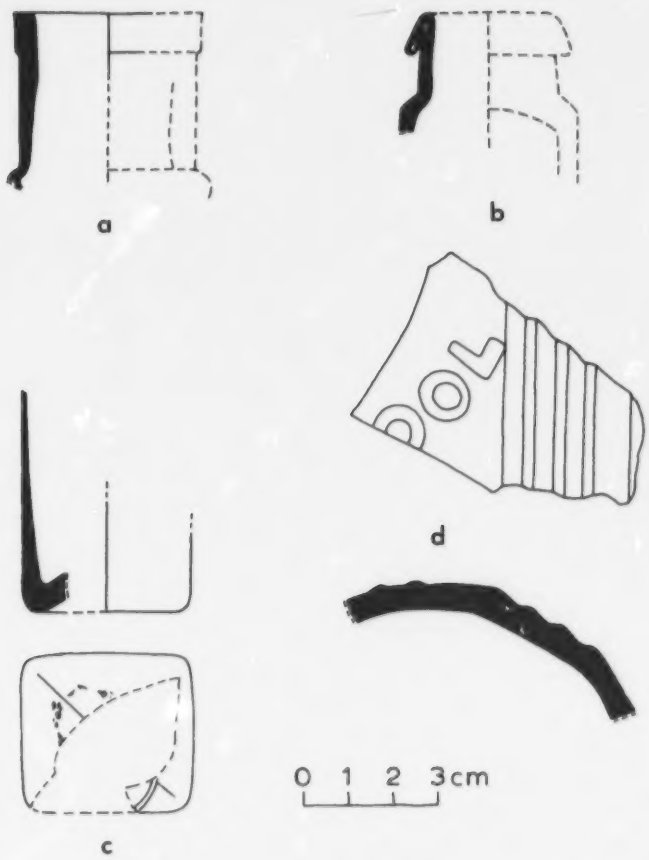

Figure 22. Food storage container fragments. Dimensions are in millimetres:

a) (5B1C1-20)

Lip ht.	9
Lip diam.	42
Neck diam.	40
Neck ht.	±42

b) (5B1H17-2)

Lip ht.	8
Neck ht.	18
Chamfer width	6

c) (5B1H2-7)

Base length	38
Base width	38
Push-up ht.	4
Pontil mark diam.	16

d) Flett, Liverpool (5B2B3-18)

Lettering ht.	12

Specimen 3 (5B2H5-3)

A body fragment from a pale green (5GY) hexagonal bottle was most likely a pickle jar fragment. Two other fragments, 5B2G4-4 and 5B2E3-3, may represent two more jars or could be from the same jar. The jar was blown in a mould, probably two-piece. It had six flat sides 37 mm wide with an extant height of 128 mm and a body width of 69 mm. Whitall, Tatum and Company advertised "Gallon Hexagon" pickle jars from 1876 to 1897. After this the hexagon seems to have been replaced by octagonal, square and round (cylindrical) jars. It is these three also that appear in the early 20th-century Canadian glass catalogues. Although the fragment from Fort Anne represented at the most a quart jar, it is probably a jar dating from the last three decades of the 19th century, or even slightly earlier, up to the 1920s, providing the jar was indeed mouth-blown and not machine made.

Specimen 4 (5B2H6-13)

A second type of pickle jar, this time a more common "square" jar, was represented by a pale green (7.5GY) fragment of slightly bubbled glass. The sides were joined by a chamfer 15 mm wide. The bearing surface was flat and joined to the body by a chamfer of 4 mm. The central portion of the base had a large square pyramid-shaped impression with concave chamfered corners. A diminishing rib or ray went from each chamfer to the centre of the impression. Several examples of square jars found at Fort Beauséjour, New Brunswick, had identical basal features but were empontiled, indicating manufacture before 1860. The popularity of this type of jar extended into the 20th century as the Dominion Glass Company's packers' catalogue (1913 to about 1915) illustrated four varieties of square pickle jars of which each could be "made to take any style of closure" (p. 64).

Specimen 5 (5B2B3-18)

A roughly cylindrical bottle was represented by a pale green (7.5GY) embossed and ribbed body fragment mouth-blown in a two-piece mould (Fig. 22d). The letters ...OOL, possibly [LIVERP]OOL, were embossed in an arc across the lower part of the body. Adjacent were three vertical ribs and a vertical mould line with a hand-finished, stopper-finished bore. William and James Flett operated an oil and Italian export and pickle factory in Liverpool, England. They first appear in the Liverpool Directory in 1864 and in 1875 they separated, each of them starting his own business (Smith, personal communication).

Specimen 6 (5B1C1-20)

The most recent example of a hand-finished food storage bottle was specimen 6, part of a wide cylindrical neck (Fig. 22a). At the top of the neck was a flat lip designed to take a cork and at the base of the neck was a neck ring. The glass had originally been clear but had turned a faint purple, indicating the presence of manganese in the glass. This type of neck was common to a number of food storage containers and could have had a variety of finishes. Dominion Glass' packers catalogue (1913 to about 1915) illustrated 14 different jars with such a neck. The presence of manganese in the glass indicates that the Fort Anne example was made before the First World War; however, probably not much earlier than the 1880s or 1890s.

TABLEGLASS

The term "tableglass" is used here to distinguish non-bottle glass and includes such objects as wine glasses and tumblers, a decanter and stopper, and oil lamps and lamp chimneys. Only a relatively small amount of tableglass was found at Fort Anne. There were 100 fragments in all possibly representing almost as many objects. Approximately three-quarters of the tableglass dates from about 1700 to 1820 and was understandably of English origin. Although generally fragmentary, several objects could be identified and subsequently dated. Where more than one object of a type was found the best example (which usually meant the most complete) was catalogued and described and the proveniences of the remaining examples were included in brackets after the catalogued specimen number.

18th-Century Lead Glass Stemware

Specimen 1 (5B2J5-11 [5B1E13])

This specimen was represented by a clear lead glass bowl and stem fragment in a "baluster" form (Fig. 23a). The bowl was heavy-based and waisted, welded to an inverted hollow raluster stem. Heavy glasses of this type were popular between 1685 and 1725; however, waisted bowls were apparently not common until about 1710 or later (Haynes 1959: 209; Elville 1960: 47). Although a post-1710 deposit date is most likely, in light of illicit French trade with New England, a slightly earlier date is possible.

Specimen 2 (5B1H11-26 [5B1B5])

The bowl base in Figure 24b was made of heavy, clear lead glass and was similar in style to specimen 1. The base of the bowl suggests the complete bowl had a common round funnel shape. The bowl shape and the heaviness of the glass indicate a date of manufacture between 1685 and 1725; however, the date of deposition was probably after 1710.

Specimen 3 (5B1M6-3 [5B1H13, 5B1H14])

Almost the complete stem remained of this specimen, a rather elaborate lead glass stem, heavy but lighter looking than the previous examples (Fig. 23b). The bowl, apparently

bucket-shaped, surmounted a flattened or annular knop, an annulated knop and a hollow inverted baluster knop in that order. Lighter knopped glasses of this type in which no single stem element dominates are usually referred to as "balustroids" and were common from about 1725 to 1760 (Haynes 1959: 222).

Specimen 4 (5B1B4-6)

A second balustroid wine glass was represented by a much plainer stem (Fig. 24a). This stem was distinguished by its heavy greyish lead glass and a single basal knop. Its date of manufacture would be comparable to that of the previous specimen.

Specimen 5 (5B4L1-6 [5B1F40, 5B1H13, 5B2J1, 5B2J2, 5B3B1, 5B4C1])

The distinguishing feature of this specimen, a stemware foot, was its folded foot rim (Fig. 24c). The foot was made of colourless lead glass, was quite light, patinated and empontiled. At the base of the stem was a small knop. Folded foot rims were common before 1745 (Elville 1960: 85-87; Thorpe 1969: 209) and again popular after about 1780 for a short period (Elville 1960: 87). This foot and the other folded rim fragments listed could easily belong to either period.

Specimen 6 (5B2F2-19 [5B1H5, 5B2H5])

A plain conical foot fragment was found that was similar to specimen 5 but without the folded rim. The fragment was fairly thin, made of lead glass and patinated. As stated earlier, folded feet were common before 1745 although the use of plain feet on the early baluster wine glasses had doubled from 10 to 20% by 1730 and was generally the rule after 1745 (Elville 1960: 76, 85). It was much more economical to use the smaller, lighter plain foot on wine glasses after implementation of the Glass Excise Act of 1745 by which a duty was imposed on the weight of materials used in the making of glass. The plain foot fragments from Fort Anne could have been manufactured before mid-century but would have been most common after 1745.

Seven fragments of lead glass stemware (5B1A22, 5B1B5, 5B1B8, 5B1F1, 5B1G27, 5B1H13, 5B2L1) were too fragmentary to identify, but all of them were probably of 18th-century English manufacture.

Lead Glass Tumblers

Among the four tumbler fragments found were three distinctive groups, each grouping based on a distinguishing feature. There were two plain tumblers with unfinished bases, one tumbler with a finished base and one waisted tumbler.

Specimen 1 (5B4L2-17 [5B1H5])

This specimen (Fig. 24e) was the most complete example of a plain tumbler with an unfinished base and was typical of the bases found on plain lead glass tumblers from about 1740 to 1860 according to the criteria put forth by McNally (1971: 21-23). The base was thick, slightly pushed up, retained its pontil mark and was between 50 and 70 mm in diameter with sloping sides. Tumblers of this type would have been considerably less common with the introduction of pressed glass in the late 1820s.

Specimen 2 (5B1F40-6)

This tumbler base differed from the previous one in that the pontil mark had been removed by grinding and polishing or "finishing" the base. This finishing resulted in a smooth concave area approximately 50 mm in diameter on a base approximately 70 mm in diameter.

Many English writers believe tumbler bases were never ground during the 18th century (Elville 1961: 97); nevertheless, decanter bases were apparently rarely unfinished after the early 1750s (Hughes 1956: 255) and salts were advertised as ground and polished, a description Elville (1960: 124-25) interpreted as finished. Some countries other than England did grind the pontil marks off tumblers as early as the second quarter of the 18th century, as evidenced by the group of Bohemian "exportware" tumblers in the Parks Canada collection from the Roma site in Prince Edward Island. Therefore, the use of finished tumbler bases as a dating criterion is not useful at this time, and one may assume that this tumbler would have been manufactured during the same period as specimen 1.

Specimen 3 (5B1H5-17)

Only the base remained of this waisted tumbler (Fig. 24d). Its basal surface was almost flat and bore a glass-tipped pontil mark. Above the constriction or waist of the tumbler the body would have widened into a conical shape much like that of a firing glass. According to Hughes (1956: 228), waisted tumblers (also called "dram" glasses or

"firing" glasses) were manufactured in large numbers from about 1750 to the 1820s, yet they are uncommon in North American historic sites. The only other excavated examples known to me are from Fort Michilimackinac, Michigan, deposited at that site before 1763 (Brown 1971: 172-73) and from Old Sturbridge Village, Massachusetts (Wilson, unpublished data).

Decanters and Stoppers

Fragments from one decanter and one or two stoppers were found at Fort Anne. All fragments were of lead glass.

Specimen 1 (5B2B3-21)

The only decanter found was represented by several base and body fragments of cut glass (Fig. 25). Above the base the body was cylindrical and cut in alternating vertical flutes and mitres. A horizontal flute crossed these at right angles approximately 40 mm above the base. The basal surface was cut in a mitred star design, a feature both decorative and practical as it removed the pontil mark. Decanters of this style, referred to as "Prussian-shaped" by Ash (1962: 145) and "barrel-style" by Elville (1960: 123), were popular in Great Britain from the 1780s until after the 1830s (Ash 1962: 145-46).

Specimen 2 (5B2B3-23)

The finial fragment shown in Figure 26a, b was part of a pressed mushroom stopper, so-called for obvious reasons. The underside of the finial was formed by three concentric rings, the top by a series of radiating V-shaped ridges. Often the space between the finial and shank was plain but on some mushroom stoppers there could be a ball knop in this area (Ash 1962: 148; Elville 1960: 224).

Mushroom stoppers, cut or pressed, were commonly found on Prussian-shaped or barrel-style decanters popular from about 1780 to about 1830. According to McKearin and McKearin (1948: 26) "small objects such as feet for wines and stoppers for decanters and bottles" were pressed by hand in a pincer-like device "long before the invention of the pressing machine in the late 1820s." As this stopper and decanter were found in the same excavation unit, the stopper was probably used with the decanter and, if it was the original stopper, it would pre-date the late 1820s.

Specimen 3 (5B1H1-5)

This plain stopper shank (Fig. 26c) could belong to the finial in Figure 26a, b or could more likely be from a completely different stopper. It seems to have been from a stopper of earlier manufacture because the pontil mark remained on the base of the shank and the shank was not ground. According to Hughes (1956: 254) it was a routine procedure to grind stopper shanks and decanter necks by 1745. This would apply to all stoppers, no matter what their method of manufacture.

19th-Century Pressed Glassware

The first patent for glass-pressing apparatus was granted in 1825 in the United States. In most early instances lead glass was used in moulds imitating, with the exception of "Lacy" glass, cut-glass designs. In 1864 a successful formula for cheaper lime glass was developed and in a few years had superseded lead glass in most of the factories specializing in pressed glassware in North America. A few factories held out until the late 1870s (McKearin and McKearin 1948: 334, 395).

Specimen 1 (5B2B4-8)

This specimen, a lead glass goblet, was represented by a fragment from the bowl and bore part of a pressed "Buckle" pattern (Fig. 27a). This was a fairly conventional pattern and was in production during the 1870s and possibly earlier (Revi 1964: 168). The Gillinder Glass Works of Philadephia and the Union Glass Company of Somerville, Massachusetts, both produced wares in the Buckle pattern (Revi 1964: 168, 304). As this fragment was of lead glass it may have been among earlier pressed pieces, possibly dating before the 1870s.

Specimen 2 (5B4B1-1)

A large rim fragment with a pressed "Horseshoe" or "Good Luck" pattern evidently represented an oval or oblong serving dish (Fig. 27b). The glass was non-lead with a pale purple tint indicating of the use of manganese as a decolourizer; hence the piece was of pre-World War I manufacture. Glassware in this pattern was manufactured by Adams and Company near Pittsburgh about 1881, but the pattern may date to the 1870s (Revi 1964: 20).

Specimen 3 (5B4L1-7)

This pressed, non-lead tumbler was distinctive primarily because of its size, only about 33 mm in diameter at the base. It had an extant height of 32 mm. The basal surface consisted of a narrow flat band, the bearing surface, which encircled a smooth concavity approximately 23 mm in diameter and 4 mm deep. The bearing surface had been ground presumably to eliminate unsightly mould marks and provide a smooth, stable surface. A series of short vertical moulded ribs 13 mm high and 3 mm wide ehcircled the lower body at the base. Although the tumbler base had not been empontiled the vessel could have been manufactured as early as the late 1820s as pressed glass items had no need of empontiling. It is difficult to predict an end date for this tumbler but it could conceivably have been made as late as the early 20th century.

Specimen 4 (5B4L2-18)

A pressed "Fine Rib" tumbler was represented by a base fragment of thin non-lead glass with a pale purple tint. The ribbing was fine and close together, and appeared to extend the full height of the tumbler, giving the tumbler body an "accordion" appearance. This design was very popular during the 1850s and early 1860s but continued to be manufactured after this time (McKearin and McKearin 1948: 395). From the modern appearance of this particular fragment it appears the pattern was manufactured in the early 20th century as well as the 19th.

Specimen 5 (5B1E5-5)

Part of a clear pressed glass tumbler with arched flutes surrounding the lower basal area represented what may have been an even later tumbler than the above. The vessel had been fire-polished and had a glossy smooth surface.

Lamp Parts

Eight fragments from oil lamps were found and of these, six were lamp chimney fragments, one appeared to be a font fragment and one a foot fragment. Only four of the fragments, however, were worthy of mention and their descriptions follow. All of the fragments appeared to have been from lamps that burned kerosene, a fuel that by 1861 was displacing all other kinds of lamp fuel (Russell 1968: 139).

Specimen 1 (5B2B4-7)

This specimen was represented by a fragment from the top rim of a lamp chimney. The rim was scalloped or "crimped" like the rim on the chimney fragment shown in Figure 28, but was slightly larger. Each scallop measured 25 mm across. The glass had a faint purple tint. According to Russell (1968: 283) crimped rims and beaded rims were rare in Canada before 1885, but in the United States a crimping machine was patented in 1877 although labour problems halted its use until about 1880 (Davis 1949: 155). Therefore this chimney could have been manufactured as early as about 1880 but more likely during 1885-1915.

Specimen 2 (5B2A8-3)

This was another crimped rim fragment but of clear glass and much smaller than the above example. Each scallop measured only 10 mm across. Rim diameters were impossible to measure due to the small size of the fragment.

Specimen 3 (5B2K2-13)

The third fragment was from the bottom rim of a deep red (2.5R) glass chimney. The bottom edge of the rim had been ground to fit the burner and was 65 mm in diameter. The chimney extended vertically above the rim for approximately 25 mm before expanding into the usual bulge. Coloured glass chimneys were used mainly on night lamps for a subdued light and were particularly common in the late 19th century (Russell 1968: 273, 285).

Specimen 4 (5B4L2-12)

This fragment of clear non-lead glass (Fig. 27c) was part of a pressed foot and could have belonged to one of several different objects although a lamp foot or stand seemed most likely. The foot was hollow underneath with a rim composed of convex flutes. The top of the foot was beaded about the stem. Revi (1964: 305) illustrates lamps with similar bases made at the Union Glass Company, Somerville, Massachusetts, probably during 1870-85.

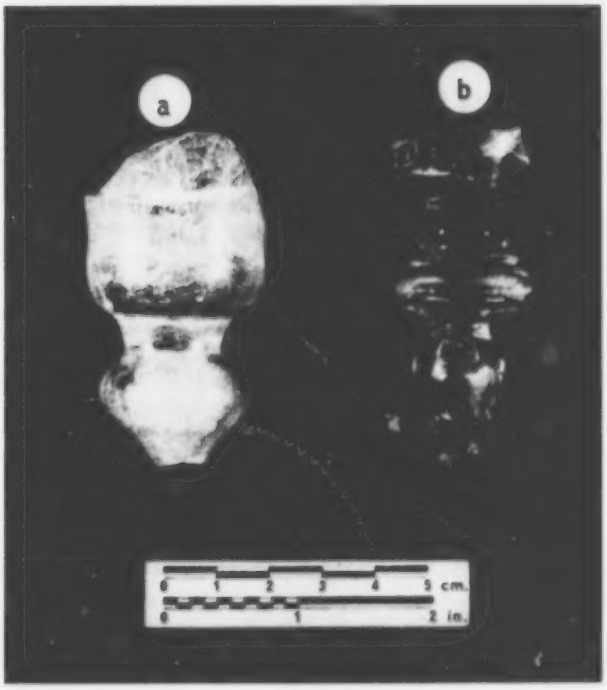

Figure 23. Lead glass stemware fragments. Photo catalogue number RA-3316M. Dimensions are in millimetres:

a) (5B2J5-11)

Bowl base diam.	34
Knop diam.	30
Knop ht.	17
Stem diam. above knop	19
Stem diam. below knop	12

b) (5B1M6-3)

Bowl base diam.	25
Flattened knop diam.	18
Flattened knop ht.	7
Annulated knop diam.	27
Annulated knop ht.	13
Inverted baluster knop diam.	18

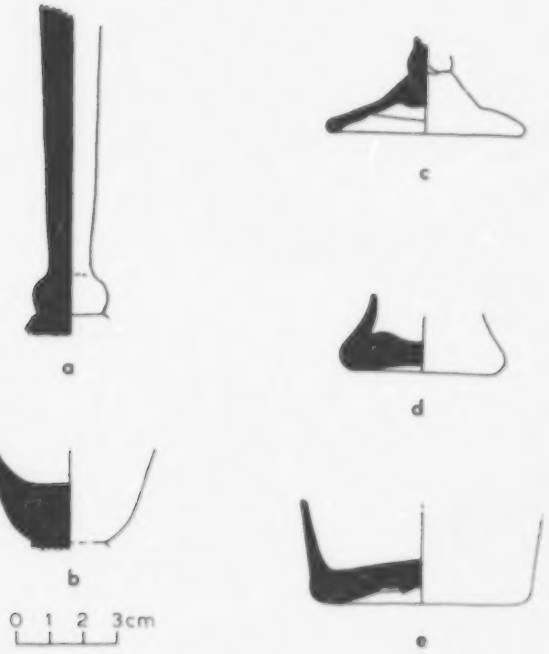

Figure 24. Lead glass drinking glass fragments. Dimensions are in millimetres:

a) Plain stem with basal knop (5B1B4-6)

Stem diam.	13-18
Stem ht., extant	92
Knop diam.	21
Knop ht.	11

b) Bowl fragment (5B1H11-26)

Bowl diam., extant	50
Stem diam. below bowl	24

c) Folded foot (5B4L1-6)

Stem diam.	11
Knop diam.	14
Knop ht.	6
Foot diam.	57
Pontil mark diam.	15

d) Waisted tumbler base (5B1H5-17)

Foot diam.	49
Push-up ht.	2
Pontil mark diam.	17

e) Tumbler base (5B4L2-17)

Base diam.	64
Pontil mark diam.	26
Push-up ht.	5

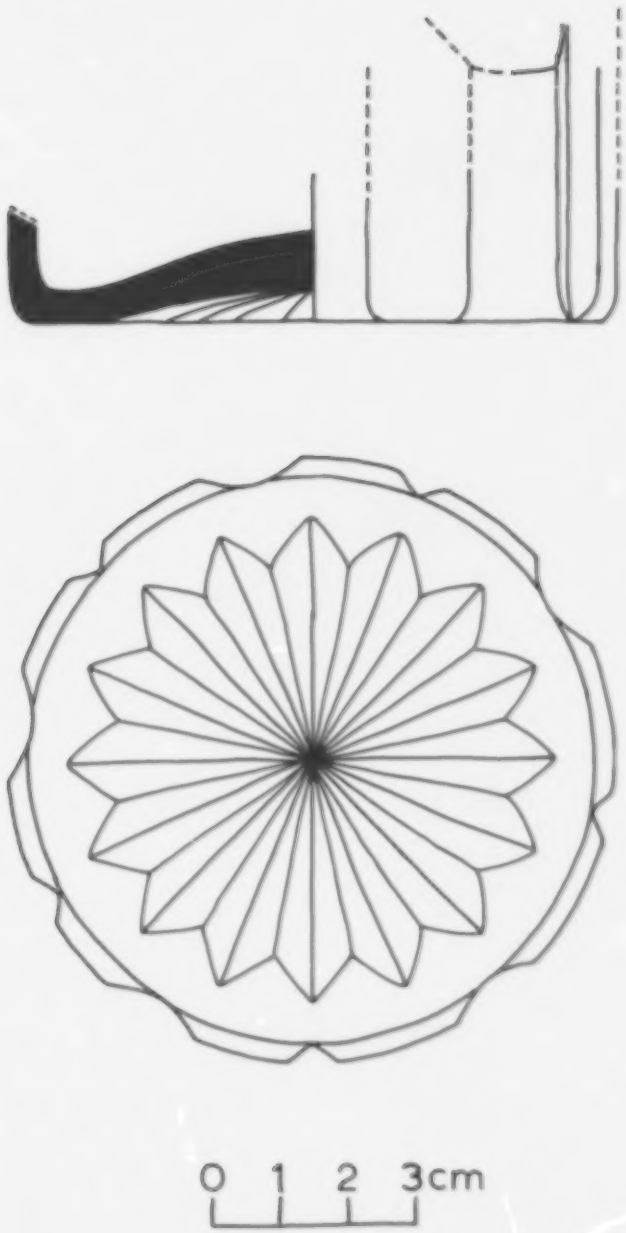

Figure 25. Cut lead glass decanter base with reconstruction of basal surface design (5B2B3-21). Dimensions are in millimetres:

Base diam.	90
Push-up ht.	5
Width of flutes	15
Width of mitres	7
Diam. basal design	74

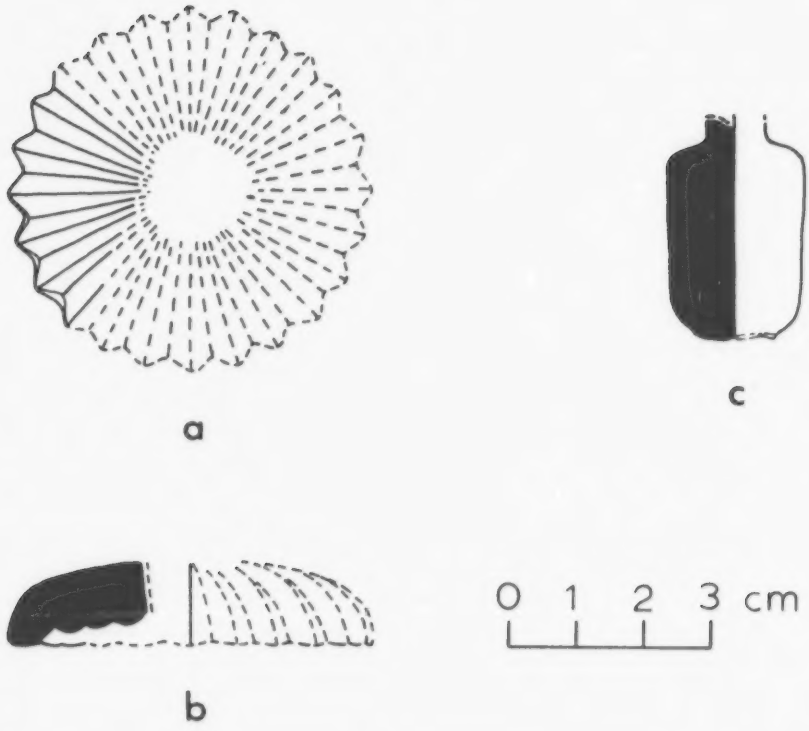

Figure 26. Lead glass stopper fragments. Dimensions are in millimetres:

a), b) Top view, cross section and profile of a pressed glass mushroom stopper finial (5B2B3-23)

Finial ht.	±15
Finial diam.	±52

c) Cross section and profile of an unground stopper shank (5B1H1-5)

Shank ht.	29
Shoulder diam.	21
Base diam.	19
Basal scar diam.	12

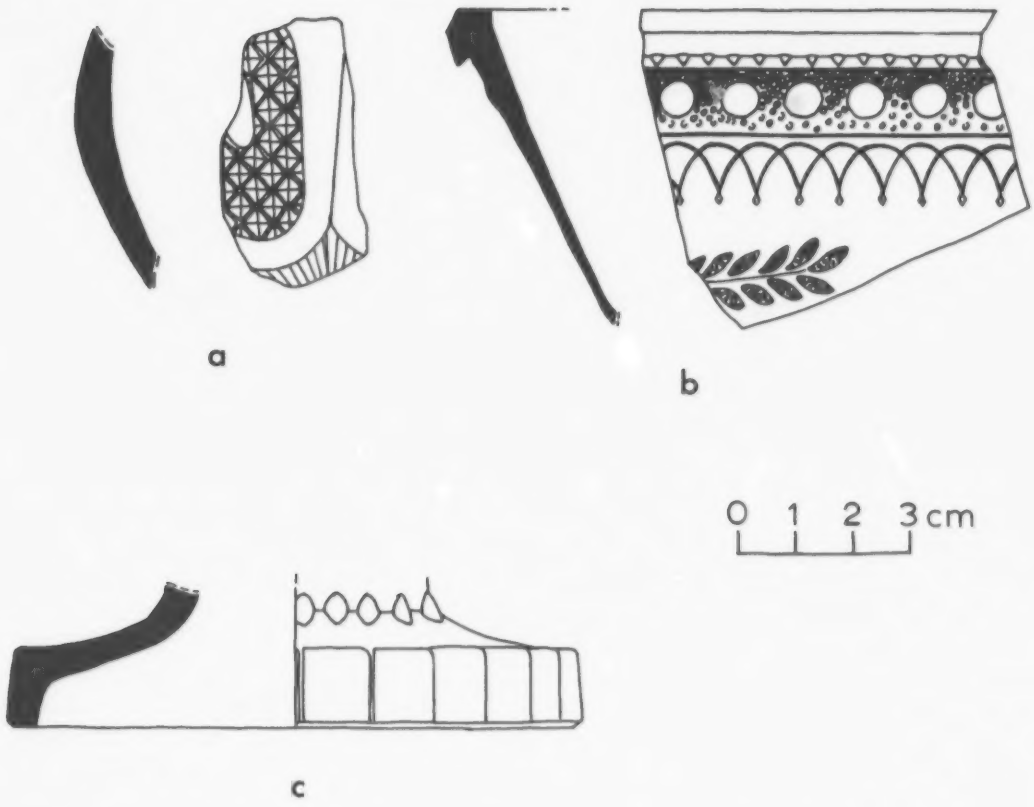

Figure 27. Pressed glass fragments. a, Lead glass goblet fragment, Buckle type pattern (5B2B4-8); b, serving dish rim fragment, Horseshoe or Goodluck pattern (5B4B1-1); c) foot fragment (5B4L2-12).

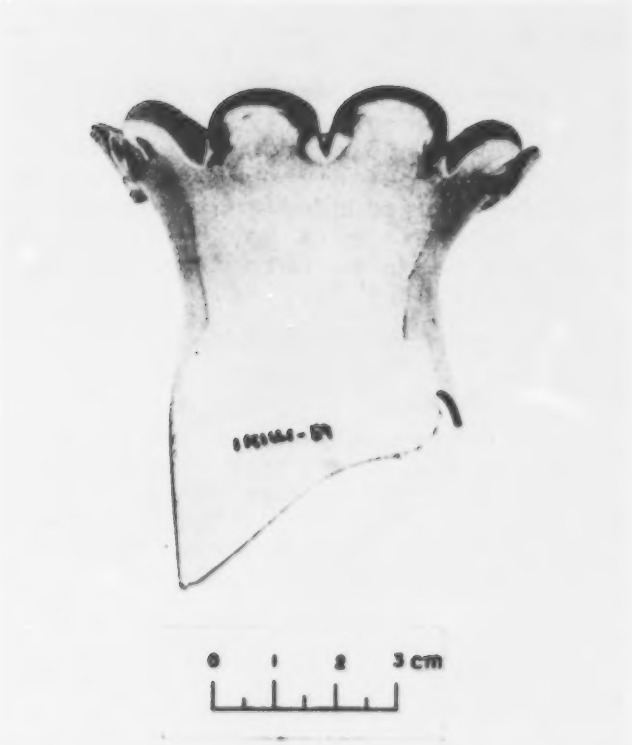

Figure 28. Lamp chimney fragment from Lower Fort Garry, Manitoba, showing a crimped or scalloped rim (1K1U1-59). Photo catalogue number RA-721-B.

UNIDENTIFIED GLASSWARE

Specimen 1 (5B2K3-9)

The first fragment of unidentified glassware dealt with here was a small pale blue-green (7.5BG) neck (Fig. 29a). It had been mouth-blown into a two-piece mould and possibly finished with a lipping tool although the lip was fairly uneven. The shoulder was rounded and probably joined a cylindrical body. This fragment may be from a small ink or druggists' bottle and seems to date from the last half of the 19th century or slightly earlier.

Specimen 2 (5B1H11-10)

Another small bottle was represented by the pale green (7.5G) neck fragment in Figure 29b. The neck did not appear to have been formed in a mould, but rather free-blown with a cracked-off and fire-polished lip. This fragment may have been from an early 18th-century medicine phial. Other glass artifacts from the same excavation unit generally pre-dated the 1750s.

Specimen 3 (5B3B4-4)

A flanged lip of green (7.5GY) glass represented this bottle (Fig. 29c). It would quite likely have belonged to any one of the variety of small bottles, particularly medicines, common to the 18th century. As the neck had a wide bore the bottle was probably used for dry spices or a powder.

Specimen 4 (5B1B5-14)

A blue-green (10BG) densely bubbled push-up fragment remained of this bottle (Fig. 29d). The push-up was conical with a glass-tipped pontil mark near the tip. The quality of the glass resembled French blue-green glass of the 18th century and this fragment probably belonged to one of a variety of bottles manufactured in blue-green glass by the French. There were six other blue-green fragments, also probably French, from the following excavation units: 5B1B8, 5B1C1, 5B1H17, 5B2L7, 5B2J1, 5B2J5, 5B4L2.

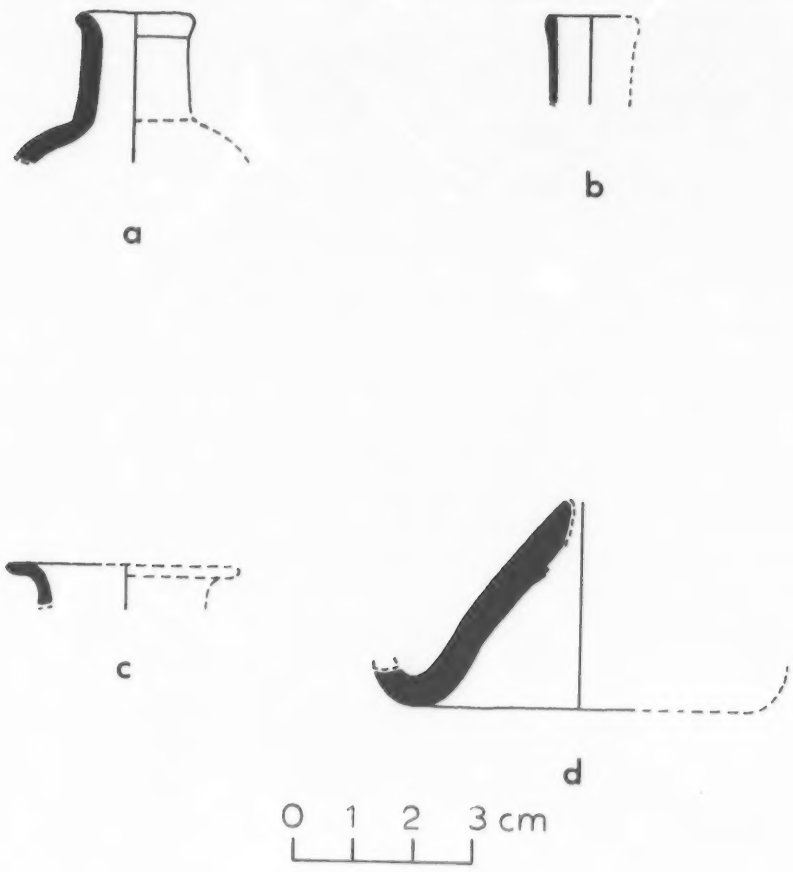

Figure 29. Unidentified blue-green bottle fragments. Dimensions are in millimetres:

a) (5B2K3-9)

Lip ht.	4
Lip diam.	21
Neck ht.	18
Neck diam.	17

b) (5B1H11-10)

Lip diam.	16
Neck diam.	+16

c) (5B3B4-4)

Lip ht.	2
Lip diam.	40

d) (5B1B5-14)

Base diam.	±70
Push-up ht.	±30
Pontil mark diam.	±20

Specimen 5 (5B1A11-6)

Of all the unidentified glassware from Fort Anne this fragment was the most interesting. It was a small fragment of non-lead, lightly bubbled glass with a greyish tint, from a cylindrical body with a curved shoulder. Randomly across the body and roughly parallel to one another were thin glass threads less than 1 mm thick, a design element described as "perhaps the oldest and easiest ornament in the whole history of glassmaking" (Thorpe 1969: 167), but associated here in an excavation unit containing nothing other than modern glass.

Specimen 6 (5B1B5-2 [5B1H6])

This specimen was represented by five flat fragments of olive green (7.5Y) glass with chamfered corners and no mould marks. It is possible these fragments were from dip-moulded or paddled snuff or blacking bottles from the 18th or 19th century.

Specimen 7 (5B1H11-9 [5B1H18])

The olive green (7.5Y) neck fragment in Figure 30a was one of two very similar necks. It was from a mouth-blown bottle that had been finished by adding a string rim and everting the lip. The two necks probably belonged to the bases described as specimen 8.

Specimen 8 (5B2B4-9 [5B2D4, 5B2D6, 5B4L2])

Specimen 5B2B4-9 (Fig. 30b) was the best example of three to five similar bases. Its general appearance, although smaller, resembled 18th-century French wine bottle bases (Fig. 2b) as the push-up was conical with a glass-tipped pontil mark, the heel was rounded and the body widened toward the shoulder. Conjecturally speaking, these bases may have been small-sized French wine bottles, or even specialized containers for a specific liquid. In any case, they were most likely of 18th-century European manufacture.

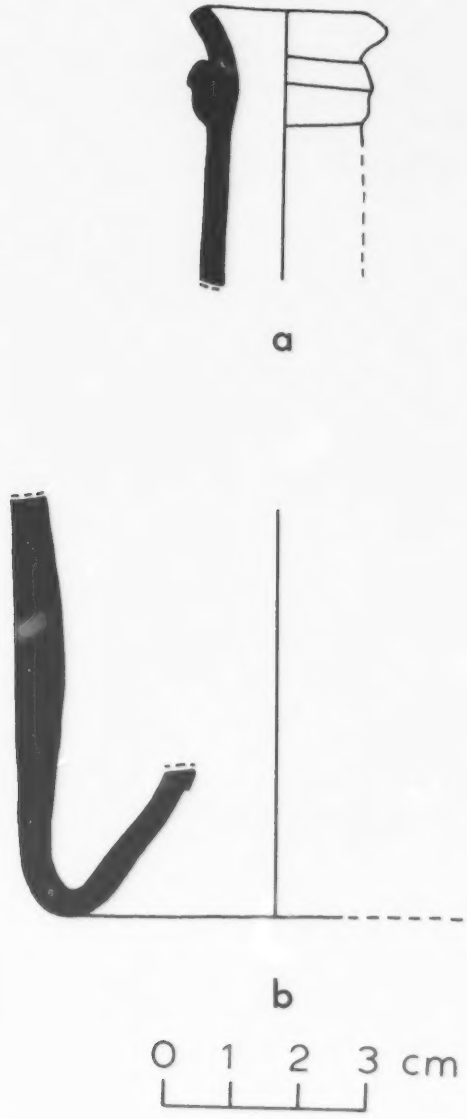

Figure 30. Unidentified olive green bottle fragments. Dimensions are in millimetres:

a) Neck fragment (5B1H11-9)	
Lip ht.	8
Lip diam.	30
String rim ht.	9
String rim diam.	28
Finish ht.	17
Neck diam.	24
b) Base fragment	75-80
Push-up ht.	25

CONCLUSIONS AND DISCUSSION

As the No. 2 powder magazine was the only structure to be completely excavated at Fort Anne, generalizations about the whole are speculative. Further, a powder magazine may be a poor indicator of everyday life under any circumstances. There were, however, certain features of the excavated material that were significant in terms of the history of the fort and glassware in general.

The fact that the French were present in the area for more than a century from about 1635 to 1756 was hardly evident in terms of the glassware from the site as French glass was conspicuous by its absence. There was no tableware and only a few fragments of blue-green bottles and flower-pot-shaped liquor bottles, both types commonly associated with 18th-century occupations. This lack of French glass pre-dating the 18th century is a mystery. A similar situation occurred at the Acadian site of Beaubassin where globular liquor bottles dating from 1685 to 1730 represented the earliest glass found (Harris 1971: 140). I suggested then that glassware not being the popular commodity that it was later to become was simply not needed or sought after by the self-sufficient Acadians. Nevertheless, since excavations at Fort Anne focussed on the powder magazine which was not constructed until 1708, it could be that future excavations might uncover earlier French occupation areas and thus shed light on the use of glassware by the 17th-century French in the New World.

Conversely, the early 18th-century British presence was more obviously represented among the glassware by globular liquor bottles and heavy lead glass tableware. Although much of this glass could possibly be late 17th century and some may indeed relate to the French, its occurrence most likely coincides with British ascendancy. The superior quality of the tableglass suggests its association with the members of the British administration at the fort in the first half of the 18th century, rather than with the Acadians in the area.

Excavated bottles and glassware representing the progression of the 18th century into the 19th century were much more abundant then those from the mid-18th century. While possibly 40 bottles represented the early 18th century, about only 40 more represented the remainder of that century. Most of these were from the last quarter of the 18th century overlapping into the first quarter of the 19th century, quite possibly reflecting the increased activity surrounding the construction of the officers' quarters.

The increasing popularity of glass as a container in the 19th century was evident in the wide variety of

glassware found from this period even after the fort was under domestic occupancy. As well as black glass liquor bottles, there were flasks and stoppers, beers and mineral water bottles, medicines and pharmaceuticals, jars, lamp parts and tableware. Liquor bottles and pharmaceuticals made up by far the largest proportion of glassware dating to the last half of the 19th century and early 20th century. Their abundance and occurrence together in and around the powder magazine suggest the popularity of some medicines as beverages as well as the popularity of the powder magazine as a drinking place.

Although only a relatively small area of Fort Anne was excavated and the nature of the one structure excavated precludes the existence of typical occuption debris, I hope this discussion and identification of the glassware will be useful in developing future research designs incorporating some of the questions broached in this brief study.

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